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PREHISTORIC MAN.

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A FLATHEAD WOMAN AND CHILD.

Drawn by D Wilson, L.L.D. from sketches by Paul Kane.

PREHISTORIC MAN

RESEARCHES INTO THE ORIGIN OF CIVILISATION IN THE OLD AND THE NEW WORLD

BY

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IN FOND MEMORIAL

OF A BROTHER'S LIFE-LONG SYMPATHY

IN MANY FAVOURITE RESEARCHES

THIS VOLUME

DEPRIVED BY DEATH OF ITS PURPOSED DEDICATION

IS INSCRIBED WITH THE LOVED NAME OF

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Vincent Brooks, lith.

CHIMPSEYAN CHIEF.

Drawn by D. Wilson, L.L.D. from sketches by Paul Kane.

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PREFACE.

After long investigation of the archæology and ethnology of Britain, and to some extent of Europe at large, it was the Author's fortune to be transferred to a young colony of the New World, from whence, during the last twelve years, he has looked on many novel phases of life, strikingly contrasting with all that had previously excited his interest and attracted his study. During the same period many zealous observers have been striving to recover the traces of Man in that strange era of Europe's unchronicled centuries, which long preceded all beginnings of history. But while their researches are being rewarded by discoveries of the profoundest interest, every fresh disclosure confirms the impression produced on the Author's mind in reference to the aboriginal tribes, and the native arts and customs of the American continent: that he had previously realized much in relation to a long obliterated past of Britain's and Europe's infancy, which he has there found reproduced as a living reality.

The Western Hemisphere is only now beginning to be historical; yet it proves to have been the theatre of human life, and of many revolutions of nations, through centuries reaching back towards an antiquity as vague as that which lies behind Europe's historic dawn; and the study alike of the prehistoric and the unhistoric races of America is replete with promise of novel truths in reference to primeval man. The argument constructed on this basis, relative to the origin of civilisation and the distinctive attributes natural to man, is now reproduced after extended oppor-

tunities of study and careful revision. The subject treated of is undergoing such rapid development in its European phases, that the interval between this and the former edition—brief though it has been,—has been one of marked progress. The opportunities of a new edition, which enable the Author to harmonize his own later observations with recent disclosures of European science, are all the more acceptable from the fact that the former one not only passed through the press without revision; but, owing to delays inevitable from the Author's distance from printer and publisher, its appearance was preceded by publications and discoveries specially inviting notice from his point of view. Some errors beyond the reach of errata also resulted from the want of proof-sheets. But of those it is only necessary to notice here the woodcut, Fig. 58, p. 446, which was introduced with the title of one now correctly given on p. 449, as an example of the normal Peruvian dolichocephalic skull. The changes, as a whole, include both reconstruction and condensation, along with considerable additions alike in illustration and argument.

Thus revised, these researches are now commended anew to readers interested in this branch of inquiry. The point of view is a novel one; the Author's opportunities for observation and study have been in many respects favourable; and his conclusions may perhaps possess some special claims to attention, from the fact that they embody a survey not only of America's extinct nations, but also of its strangely intermingled living races: indigenous and intrusive; at a time when one important cycle in the peculiar relations of two, at least, of the latter, seems hastening to its close.

UNIVERSITY COLLEGE, TORONTO,
29th April 1865.

PREFACE TO THE FIRST EDITION.

THE object aimed at in the following work is to view Man, as far as possible, unaffected by those modifying influences which accompany the development of nations and the maturity of a true historic period, in order thereby to ascertain the sources from whence such development and maturity proceed. These researches into the origin of civilisation have accordingly been pursued under the belief which influenced the author in previous inquiries, that the investigations of the archæologist, when carried on in an enlightened spirit, are replete with interest in relation to some of the most important problems of modern science. To confine our studies to mere antiquities is like reading by candle-light at noon-day; but to reject the aid of archæology in the progress of science, and especially of ethnological science, is to extinguish the lamp of the student when most dependent on its borrowed rays. This is impressed on the mind with renewed force by the novel phases in which the problems affecting man's being are reproduced. We are no longer permitted to discuss merely the diversities of existing races. It seems as if the whole comprehensive question of man's origin must be reopened, and determined afresh in its relations to modern science. To the naturalist who turns from the study of inferior orders of life, man civilized, or even brought into close contact with civilisation, seems an essentially artificial product of many extraneous influences: a being "from nature rising slow to art." Nor has the verdict of the philosopher invariably conflicted with the fancy of the poet, that man devoid of all civilisation is in a state of nature, and the true type of man primeval. Against such an idea, however, all the higher attributes of his nature seem to cry out. Tested by every moral standard he

is found to have deteriorated far below his normal capacities, and "the noble savage" proves at last but a poet's dream.

But have we then no alternative between man *plus* the artificialities of civilisation, and man *minus* the influential operation of moral laws which have their efficient equivalents in the instincts of all other animals; or can we not realize even in theory an intermediate normal condition? Such questions are replete with interest, whatever be the value of the answers rendered here to some of the difficulties they suggest. The ethnologist does indeed study man from the same point of view as the mere naturalist; but to do so to any good purpose, this essential difference between man and all other animals must be kept in view: that in him a being appears for the first time among the multitude of animated organizations, subject to natural laws as they are, but including within himself the power of interpreting and controlling the operation of those laws; of accumulating and transmitting experience; and, above all, of looking in upon the workings of his own mind, and recognising as part of his nature a system of moral government which he may obey or resist, though not with impunity. Our aim, therefore, is to isolate him from extraneous influences, and look, if possible, on man *per se;* or at least where he can be shown to have attained maturity, exposed only to such influences as are the offspring of his own progress. In so far as this is possible we may hope to recover some means of testing man's innate capacity, and of determining by comparison what is common to the race.

Where, then, is man to be thus found? In the days of Herodotus, Transalpine Europe was a greater mystery to the nations on the shores of the Mediterranean than Central Africa is to us. To the Romans of four centuries later, Britain was still almost another world; and the great northern hive from whence the spoilers of the dismembered empire of the Cæsars were speedily to emerge, was so entirely unknown to them, that, as Dr. Arnold has remarked in his inaugural lecture: "The Roman colonies along the banks of the Rhine and the Danube looked out on the country beyond those rivers as we look up at the stars, and actually see with our eyes a world of which we know nothing." Nevertheless, the civilisation

of the historic centres of the ancient world around the Mediterranean was not without some influence on the germs of modern nations, then nursing the hardihood of a vigorous infancy beyond the Danube and the Baltic. The shores of the Atlantic and German oceans, and the islands of the British seas, had long before yielded tribute to the Phœnician mariner; and as the archæologist and the ethnologist pursue their researches, and restore to light memorials of Europe's infancy and early youth, they are more frequently startled with affinities to the ancient historic nations, in language, arts, and rites, than by the recovery of evidence of a wholly unfamiliar past.

But it is altogether different with the New World which Columbus revealed. Superficial students of its monuments have indeed misinterpreted intellectual characteristics pertaining to the infantile instincts common to human thought, into fancied analogies with the arts of Egypt; and more than one ingenious philosopher has traced out affinities with the mythology and astronomical science of the ancient East: but the western continent still stands a world apart, with a peculiar people, and with languages, arts, and customs essentially its own. To whatever source the American nations may be traced, they had remained shut in for unnumbered centuries by ocean barriers from all the influences of the historic hemisphere. Yet there the first European explorers found man so little dissimilar to all with which they were already familiar, that the name of Indian originated in the belief, retained by the great cosmographer to the last, that the American continent was no new world, but only the eastern confines of Asia.

Such, then, is a continent where man may be studied under circumstances which seem to furnish the best guarantee of his independent development. No reflex light of Grecian or Roman civilisation has guided him on his way. The great sources of religious and moral suasion which have given form to mediæval and modern Europe, and so largely influenced the polity and culture of Asia, and even of Africa, were effectually excluded; and however prolonged the period of occupation of the western hemisphere by its own American nations may have been, man is still

seen there in a condition which seems to reproduce some of the most familiar phases ascribed to the infancy of the unhistoric world. The records of its childhood are not obscured, as in Europe, by later chroniclings; where, in every attempt to decipher the traces of an earlier history, we have to spell out a nearly obliterated palimpsest. Amid the simplicity of its palæography, the aphorism, by which alone the Roman could claim to be among the world's ancient races, acquires a new force: "antiquitas seculi, juventus mundi." The revolutions of modern history, and the frequent intercourse of the nineteenth century, have indeed conjoined the western continent to ancient Christendom; and attracted attention to it most frequently as an arena whereon old political systems and religious theories are reproduced and tested anew by nations of European descent. But in the sixteenth century the absolute isolation of this "world apart" was strongly felt. Sir Thomas More was already in the household of Cardinal Morton, to which he was admitted in 1495, when the first rumours of the discovery of America reached his ears; and within twenty years thereafter he produced his platonic commonwealth of Utopia, an imaginary island visited by Raphael Hythloday, a companion, as he feigned, of Amerigo Vespucci, from whom the wondrous narrative was derived during a visit to Antwerp. Another century had nearly completed its cycle since the eye of Columbus beheld the long-expected land, when, in 1590, Edmund Spenser crossed the Irish Channel, bearing with him the first three books of the "*Faërie Queen*," in the introduction to the second of which he thus defends the verisimilitude of the fairy land in which the scenes of his "famous antique history" are laid.

"Who ever heard of th' Indian Peru?
Or who in venturous vessel measured
The Amazon huge river, now found true?
Or fruitfullest Virginia, who did ever view?

Yet all these were, when no man did them know,
Yet have from wisest ages hidden been;
And later times things more unknown shall show;
Why then should witless man so much misween
That nothing is but that which he hath seen?

> What if within the moon's fair shining sphere;
> What if in every other star unseen,
> Of other worlds he happily should hear?
> He wonder would much more; yet such to some appear."

It was by the advice of Raleigh, his "shepherd of the ocean," that the poet visited England with the unpublished poem; yet it is obvious that to his fancy the western hemisphere was still almost as much a world apart, as if the discoverers of Virginia had sailed up the blue vault of heaven, and brought back the story of another planet on which it had been their fortune to alight.

Here then appears to be a point from whence it seems possible to obtain, as it were, a parallax of man, already viewed in Europe's prehistoric dawn; to look on him as on the stars seen from Teneriffe above the clouds; and to test anew what essentially pertains to him, and what has been artificially, or even accidentally superadded by external circumstances. Such, at least, has been the author's aim in turning to account the opportunities afforded by a prolonged residence on some of the newest sites of the New World; and to the use made of these must be mainly due whatever value pertains to the glimpses of a remote past which the following pages attempt to disclose. But though thus far dependent on American researches, they refer no less to the origin of man and the beginnings of his history in the Old World than in the New. The author had already familiarized himself with the unwritten chronicles of Europe's infancy and youth, when unexpectedly transplanted among the colonists of another continent, and within reach of aboriginal tribes of the American forests. "The eye sees what it brings the power to see;" and in these he discovered objects of interest on many grounds, but chiefly from the fact that he soon perceived he had already realized much in relation to a long obliterated past of Britain's and Europe's infancy, which was here reproduced in living reality before his eyes. In 1853, he received the appointment to the chair of History and English Literature in University College, Toronto, and before the year drew to a close had commenced observations, the results of which are embodied in these volumes. Whatever may be their worth, they set forth the fruits of patient and

conscientious investigation, and concentrate into brief space deductions arrived at after much labour and research. His vacations have afforded opportunities for witnessing the Red Man as he is still to be seen beyond the outskirts of modern civilisation, and for exploring the buried memorials of extinct nations on older sites. He has also twice visited Philadelphia, and minutely studied the collections formed by the author of the *Crania Americana*, with the additions made to that valuable ethnological department of the Academy of Natural Sciences. Repeated references in the following pages indicate other American collections in Washington, Philadelphia, Boston, New York, Albany, etc., as well as those of Canada, which have also furnished useful materials.

In carrying out his researches, the author has been placed under many obligations to scientific friends. To Dr. Henry, the learned Secretary of the Smithsonian Institution at Washington; Dr. J. Aitken Meigs, the Librarian of the Academy of Natural Sciences of Philadelphia; Dr. J. C. White, the Secretary of the Boston Natural History Society; Mr. Thomas Fenwick and Dr. E. H. Davis of the American Ethnological Society; and the Hon. George Folsom of the Historical Society of New York: he is specially indebted for the liberality with which Museums and Libraries have been placed at his command. On two different visits to Philadelphia to examine the Collection of Crania formed by Dr. Morton, the keys of the cases were freely intrusted to him; and some of the many liberal services rendered in furtherance of his investigations by their experienced curator, Dr. J. Aitken Meigs, are acknowledged in the following pages. With equally unrestricted freedom, the collections of the Historical Society of New York, and the cabinets of the Natural History Society of Boston, as well as the private collections of Dr. J. Mason Warren, Mr. J. H. Blake, Dr. E. H. Davis, and others referred to, were thrown open to him; and repeated experience confirms him in the belief, that in no country in the world are public and private libraries and collections made available to the scientific inquirer with the same unrestricted freedom as in the United States. To J. H. Blake, Esq. of Boston, the author is specially indebted for the liberality with which he has placed at his disposal

notes of travel in Peru; drawings of objects observed there; and the valuable collection of mummies, crania, and Peruvian antiquities brought home by him, and repeatedly referred to in the following pages. To Dr. E. H. Davis, one of the authors of the *Ancient Monuments of the Mississippi Valley*, he is under great obligations, not only for access to the collections from which the illustrations of that work were derived, but for casts and photographs of special objects calculated to aid him in his researches. Among his Canadian friends, he owes special thanks to his colleague, Professor Croft, for carefully executed analyses of Peruvian bronzes; to Dr. Bovell and Dr. Hodder, for free use of their collections of Indian crania; to Mr. Paul Kane, the author of *Wanderings of an Artist among the Indians of North America*, for sketches made during his travels, as well as for information derived from recollections of the incidents and observations of a highly-privileged sojourner among the Indian tribes of the Hudson's Bay territory; and to the Hon. G. W. Allan, whose ethnological collections now include the numerous objects obtained by Mr. Kane during his wanderings. Older friends at home, and especially Mr. T. B. Johnston, the Treasurer of the Society of Antiquaries of Scotland, and Mr. Robert Cox, W.S., of the Edinburgh Phrenological Society, have largely aided in renewed references to the familiar collections of those Societies.

To the sympathy manifested in the author's researches by his Excellency Sir Edmund W. Head, Bart., while Governor-General of the Province, he is indebted for instructions forwarded to the various officers and superintendents of the Indian Department, whereby he has been able to obtain valuable statistics illustrating questions which affect the present condition and future prospects of the Indians of British North America, and which are discussed here in their relations to the main subject of investigation.

It only remains to be added, that while the facilities for research into the origin of civilisation and the condition of primitive races, afforded by a residence in the New World, are great, they are accompanied by one important drawback, in the want of adequate libraries or books of reference, inevitable in a young colony. As, moreover, the author has been prevented, by the impediments

which the Atlantic interposes between him and his publishers, from revising the proof-sheets of the following pages, he must crave the intelligent forbearance of the critic should any notable blunders escape the eye of the press-reader; and if, as may not improbably prove to be the case, some of his observations have been anticipated or disproved in recent publications, or even by the mere lapse of time: it may be added that the MS. was in the hands of the publishers in January 1861, and the subsequent delay in the publication of these volumes has originated in causes lying beyond his control.

UNIVERSITY COLLEGE, TORONTO,
12*th March* 1862.

PREHISTORIC MAN.

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CHAPTER I.

INTRODUCTION.

THE OLD WORLD AND THE NEW—AMERICAN PHASES OF LIFE—THE TERM PREHISTORIC—INFLUENCE OF MIGRATIONS—WHAT IS CIVILISATION?—DOMESTICATION—DEVELOPMENT OF HUMAN PROGRESS—INDIAN PHILOSOPHY—ABORIGINES—THE EAST: THE TARTAR; THE ARAB—LANGUAGES OF AMERICA—WANDERINGS OF THE NATIONS—FOSSIL MAN—THE NEW WORLD A MYSTERY.

THE discovery of America at the close of the fifteenth century wrought a marvellous change in the ideas and opinions of mankind relative to the planet they occupy, and prepared the way for many subsequent revolutions in thought, as well as in action. The world as the arena of human history was thenceforth divided into the Old and the New. In the one hemisphere tradition and myth reach backward towards a dawn of undefined antiquity; in the other, history has a definite and altogether modern beginning, and man appears there still in the initial stages of savage life. Nevertheless some of the oldest problems in relation to him find their solution in that New World; and, amid the novel inquiries which now perplex the student of science as to man's origin and antiquity, his specific characteristics, and true place in nature, answers of unexpected value are rendered from the same source.

The study of man's condition and progress in Europe's prehistoric centuries by means of his remains and works of art, reveals there his beginning as a savage hunter, armed solely with weapons of flint and bone, frequenting the lake and river margins of a continent clothed in primeval forests and haunted by enormous beasts of prey. Displaced by intrusive migrations, this rude pioneer disappears, and his traces are overlaid and erased by the improved arts of his supplanters. The infancy of the historic nations begins.

Metallurgy, architecture, science, and letters are evoked, effacing the faint records of Europe's nomadic pioneers; and the first traces of the intruders acquire so primitive an aspect, that the existence of older European nations than the Celtæ seemed till recently too extravagant an idea for serious consideration.

After devoting considerable study and research to the recovery of the traces of early arts in Britain, and realizing from many primitive disclosures some clear conception of the barbarian of Europe's prehistoric dawn, it has been my fortune to become a settler on the American continent, in the midst of scenes where the primeval forests and their savage occupants are in process of displacement by the arts and races of civilized Europe. Peculiarly favourable opportunities have helped to facilitate the study of this phase of the New World, thus seen in one of its great transitional eras: with its native tribes, and its European and African colonists in various stages of mutation, consequent on migration, intermixture, or collision. In observing the novel aspects of life resulting from such a condition of things, I have been impressed with the conviction that many of the ethnological phenomena of Europe's prehistoric centuries are there reproduced on the grandest scale. Man is once more seen subject to influences similar to those which have affected him in all great migrations and collisions of diverse races. There also is the savage in direct contact with civilisation, and exposed to the same causes by means of which the wild fauna disappear. Some difficult problems of ethnology have been simplified to my own mind by what I have thus seen; and opinions relative to Europe's prehistoric races, based purely on inference or induction, have received striking confirmation. Encouraged by this experience, I venture to set forth the results of a general inquiry into the essential characteristics of man, based chiefly on a comparison of the theoretical ethnology of primitive Europe, with such disclosures of the New World.

The tendency of modern science is to give prominence to many unheeded analogies between man and the lower animals; but the further this line of inquiry is pursued, it tends only the more strikingly to illustrate the radical nature of those differences which separate him from them, not in degree as the higher animal, but in kind. The most ancient definition of man as a creature made in the image of God, distinguishes him by no identity of physical structure with any superhuman prototype, but by intellectual and moral attributes. Thus endowed, man reasons on his relations to

the external universe; and, alone of all animated beings, is capable of interpreting and controlling the operations of those natural laws to which he and they are alike subject. This twofold nature may be studied with diverse aims, and from very different points of view; but for the purposes of the ethnologist, its characteristics are seen in their most suggestive aspects, in that contrast between savage and civilized man which forces itself on the notice of the European settler, alike in America and Australia.

We are at no loss to recognise the wild animal as in a state of nature; and its domesticated varieties as artificial products which civilisation has educed from the wild stock for man's use. When, however, it is assumed that the savage is the type of man in his natural state, and that civilisation has been entirely superinduced on that as an artificial thing, the conclusions involve a *petitio principii*. But, in so far as we can look upon him before he consciously reasons out a past or a future for himself, we are in possession of some data whereby to test this question of his primeval characteristics.

Man may be assumed to be prehistoric wherever his chroniclings of himself are undesigned, and his history is wholly recoverable by induction. The term is in no sense equivalent to preadamic; nor has it, strictly speaking, any chronological significance; but, in its relative application, corresponds to other archæological, in contradistinction to geological periods. There are modern as well as ancient prehistoric races; and both are available for solving the problem of man's true natural condition. But also the relation of man to external nature as the occupant of specific geographical areas, and subject to certain influences of climate, food, material appliances and conditions of life, involves conclusions of growing importance, in view of many novel questions to which the enlarged inquiry as to his true place in nature has given rise. If races of men are indigenous to specific areas, and controlled by the same laws which seem to regulate the geographical distribution of the animal kingdom: the results of their infringement of such laws have been subjected to the most comprehensive tests since the discovery of America. The horse transported to the New World, roams in magnificent herds over the boundless pampas; and the hog, restored to a state of nature, has exchanged the degradation of the stye for the fierce courage of the wild boar. There also the indigenous man of the prairie and the forest can still be studied unaffected by native or intruded civilisation; while

the most civilized races of Europe have been brought into contact with the African savage; and both have been subjected to all the novel influences in which the western continent contrasts no less strikingly with the temperate than with the tropical regions of the eastern hemisphere. The resultant changes have been great, and the scale on which they have been wrought out is so ample as to stamp whatever conclusions can be legitimately deduced from them with the highest interest and value.

The consequences following from changes of area and climate play a remarkable part in the history of man, and have no analogies in the migrations of the lower animals. The Frank, the Anglo-Saxon, and the Norman; the Hungarian, the Saracen, and the Turk: are all to a great extent products of the transplantation of seemingly indigenous races to more favouring soils; but the change to all of them was less than that to which the colonists of the New World have been subjected. There the old process was reversed; and the offspring of Europe's highest civilisation, abruptly transferred to the virgin forest and steppes of the American wilderness, was left amid the widening inheritance of new clearings to develop whatever tendencies lay dormant in the artificial European man.

Here then are materials full of promise for the ethnical student:—the Red-Man, indigenous, seemingly aboriginal, and still in what it is customary to call a state of nature; the Negro, with many African attributes uneffaced, systematically precluded from the free reception of the civilisation with which he has been brought in contact, but subjected nevertheless to novel influences of climate, food, and all external appliances; the White-Man also undergoing the transforming effects of climate, amid novel social and political institutions; and all three extreme types of variety or race, testing, on a sufficiently comprehensive scale, their capacity for a fertile intermingling of blood. The period, moreover, is in some respects favourable for summing up results: as changes are at work which mark the close of a cycle in the novel conditions to which one at least of the intruded races has been subjected for upwards of three centuries.

In Europe we study man only as he has been moulded by a thousand external circumstances. The arts, born at the very dawn of history, give form to its modern social life. The Divine law given forth from Sinai, and the faith and morals nurtured among the hills of Judah; the intellect of Greece, the jurisprudence and military prowess of Rome, and the civil and ecclesiastical institu-

tions of mediæval Christendom, have all helped to make of us what we are; till in the European of the nineteenth century it becomes a curious question how much pertains to the man, and how much to that civilisation, of which he is in part the author and in part the offspring? In vain we strive to detach the European man from elements foreign to him, that we may look on him as he is or was by nature; for he only exists for us as the product of all those multifarious elements which have accumulated along the track by which the generations of nineteen centuries have swept "into the younger day." The very serf of the Russian steppes cannot grow freely, as his nomade brother of Asia does; but must don the unfamiliar fashions of the Frank, as strange to him as the armour of Saul upon the youthful Ephrathite.

Is, then, civilisation natural to man; or is it only a habit or condition artificially superinduced, and as foreign to his nature as the bit and bridle to the horse, or the truck-cart to the wild ass of the desert? Such questions involve the whole ethnological problem reopened by Lamarck, Agassiz, Darwin, Huxley, and others. Whence is man? What are his antecedents? What—within the compass of this terrestrial arena, with which alone science deals,—are his future destinies? Does civilisation move only through limited cycles, repeating in new centuries the work of the old; attaining, under some varying phase, to the same maximum of our imperfect humanity, and then, like the wandering comet, returning from the splendour of its perihelion back to night?

Perhaps a question preliminary even to this is: What is civilisation? He who has seen the Euromerican[1] and the Indian side by side,—the one adapting to his novel circumstances the accumulated knowledge, the arts, laws, and social economy inherited alike from ancient and modern historical nations; the other, after centuries of contact with European progress, still haunting the uncleared forest, preying, like its wild fauna, on the spoils of the chase, dwelling in his buffalo-skin tent or birch-bark wigwam, with little more indication of maturing his own rude arts, or replacing them by those of the European intruder, than the prairie dog or the beaver:—he who has seen this can be at no loss as to the difference between civilized and uncivilized man. But is he therefore at liberty to conclude that the element which so markedly distinguishes

[1] The term *Euromerican* is used for the American-born offspring of parents of European origin or descent; and *Euro-american* for those of mixed European and Indian blood.

the White from the Red-man of the New World is an attribute peculiar to the former, rather than the development of innate powers common to man, and in the possession of which he differs from all other animals? DOMESTICATION is, for the lower animals, the subjection of them to artificial changes foreign to their nature, which they could not originate for themselves, and which they neither mature nor perpetuate: but, on the contrary, hasten to throw off so soon as left to their own uncontrolled action. CIVILISATION is for man development. It is self-originated; it matures all the faculties natural to him, and is progressive and seemingly ineradicable. Of both postulates the social life alike of the forests and the clearings of the New World seem to offer proofs; and to other profoundly interesting questions involved in an inquiry into the origin of civilisation and man's relations to it, answers may also be recovered from the same source. There the latest developments of human progress are abruptly brought face to face with the most unprogressive phases of savage nature; and many old problems are being solved anew under entirely novel conditions. The race by which this is chiefly effected had been isolated in an especial manner during many centuries of preparatory training; and illustrates in some of the sources of its progress, the impediments to the civilisation of savage races brought in contact with others at so dissimilar a stage. The very elements of Britain's greatness seem to lie in her slow maturity; in her collision with successive races only a little in advance of herself; in her natural transition through all the stages from infancy to vigorous manhood. But that done, the Old Englander becomes the New Englander; starts from his matured vantage-ground on a fresh career, and displaces the American Red-man by the American White-man, the free product of the great past and the great present.

It was with a strange and fascinating pleasure that, after having striven to resuscitate allophylian races of Britain's prehistoric ages, by means of their buried arts,[1] I found myself face to face with the aborigines of the New World. Much that had become familiar to me in fancy, as pertaining to a long obliterated past, was here the living present; while around me, in every stage of transition, lay the phases of savage and civilized life: the nature of the forest, the art of the city; the God-made country, the man-made town: each in the very process of change, extinction, and re-creation. Here, then, was a new field for the study of civilisa-

[1] Vide *Prehistoric Annals of Scotland.*

tion and all that it involves. The wild beast is in its native state, and hastens, when relieved from artificial constraints, to return to the forest wilds as to its natural condition. The forest-man—is he too in his natural condition? for Europe's sons have, for upwards of three centuries, been levelling his forests, and planting their civilisation on the clearings, yet he accepts not their civilisation as a higher goal for him. He, at least, thinks that the white man and the red are of diverse natures; that the city and the cultivated field are for the one, but the wild forest and the free chase for the other. He does not envy the white man, he only wonders at him as a being of a different nature.

Broken-Arm, the Chief of the Crees, receiving the traveller Paul Kane and his party into his lodge, at their encampment in the valley of the Saskatchewan River, told him the following tradition of the tribe:—One of the Crees became a Christian. He was a very good man, and did what was right; and when he died he was taken up to the white man's heaven, where everything was very beautiful. All were happy amongst their friends and relatives who had gone before them; but the Indian could not share their joy, for everything was strange to him. He met none of the spirits of his ancestors to welcome him: no hunting nor fishing, nor any of those occupations in which he was wont to delight. Then the Great Manitou called him, and asked him why he was joyless in His beautiful heaven; and the Indian replied that he sighed for the company of the spirits of his own people. So the Great Manitou told him that he could not send him to the Indian heaven, as he had, whilst on earth, chosen this one; but as he had been a very good man, he would send him back to earth again.

The Indian does not believe in the superiority of the white man. The difference between them is only such as he discerns between the social, constructive beaver, and the solitary, cunning fox. The Great Spirit implanted in each his peculiar faculties; why should the one covet the nature of the other? Hence one great element of the unhopeful Indian future. The progress of the white man offers even less incentive to his ambition than the cunning of the fox, or the architectural instincts of the beaver. He, at least, does not overlook, in his sylvan philosophy, that feature in the physical history of mankind, which Agassiz complains of having been neglected: viz., the natural relations between different types of man, and the animals and plants inhabiting the same regions. The American philosopher has wrought

out, as his scientific creed, the homely faith of the forest Indian. "The coincidence between the circumscription of the races of man, and the natural limits of different zoological provinces, characterized by peculiar distinct species of animals, is one of the most important and unexpected features in the natural history of mankind, which the study of the geographical distribution of all the organized beings now existing upon earth has disclosed to us. It is a fact which cannot fail to throw light, at some future time, upon the very origin of the differences existing among men; since it shows that man's physical nature is modified by the same laws as that of animals, and that any general results obtained from the animal kingdom regarding the organic differences of its various types, must also apply to man."[1]

We call the western hemisphere the New World, and fancy that, in its Indians, whom we designate *Aborigines*, we are looking on a primitive condition of life. But the Indian of the American wilds is no more primeval than his forests. Beneath the roots of their oldest giants lie chronicled memorials of an older native civilisation; and the American ethnologist and naturalist, while satisfying themselves of the persistency of a common type, and of specific ethnical characteristics prevailing throughout all the widely scattered tribes of the American continent:[2] have been studying only the temporary supplanters of nations strange to us as the extinct life of older geological periods.

In that old East, to which science still turns when searching for the cradle-land of the human family, vast areas exist, the characteristics of which seem to stamp with unprogressive endurance the inheritors of the soil. We owe to the Asiatic Researches of Humboldt a clear understanding of the physical elements which have so materially influenced the history of that continent. Along the shores of the Indian Ocean and the Levant, and stretching from the Persian Gulf into the fertile valleys of the Euphrates and the Tigris, are still found seats of civilisation coexistent with the earliest dawn of man's history. But beyond these lies the elevated table-land of Central Asia, stretching away northward, and pouring its waters into inland seas, or directing their uncivilizing courses into the frozen waters of the Arctic circle. Abrupt mountain-chains subdivide this elevated plateau into regions which have been for unrecorded ages the hives of wild pastoral tribes, unaf-

[1] "Natural Provinces of the Animal World," etc., *Types of Mankind*, p. 75.
[2] Morton: *Crania Americana*; Nott: *Indigenous Races*, etc.

fected by any intrusion of civilizing arts or settled social habits on their nomade life; until, impelled by unknown causes, they have poured southward over the seats of primitive Asiatic civilisation, or westward into the younger continent of Europe. Some also of the same wanderers may be assumed to have moved eastward towards the straits that present such obvious facilities for migration to a new continent; and thus, subjected to novel influences, a change of manners and new modes of life have resulted.

The mountain-chains which enclose and subdivide the great table-land of Asia, and stretch westward into Europe, have exercised an important influence on the distribution of the entire fauna of the two continents, including man himself. A remarkable simplicity of structure is discernible in the arrangement of the continuous lines of greatest elevation, coinciding with the routes pursued by successive waves of population which have flowed from Asia to Europe; and also indicating the probable course of a similar overflow towards the Okhotsk Sea and the Aleutian Islands: one supposed and probable route of migration to the American continent.

But, besides the great table-land of Central Asia, there is also the lesser table-land of Syria and the Arabian peninsula. From the wandering hordes of the great Asiatic steppes have come the Huns, the Magyars, and the Turks, as well as a considerable portion of the Bulgarians of modern Europe. But the sterile peninsula of Arabia has given birth to moral revolutions of the most enduring influence. With the Arab originated Hebrew monotheism, and the ampler and nobler system begotten by it in the fulness of time; and also Mohammedanism, which taught the Ottoman Turk the way to conquest, and stimulated the Semitic Saracen to an intellectual progress which revolutionized mediæval Europe. Yet the capacity for civilisation of the Magyar or Turk, transferred to new physical conditions, and subjected to higher moral and intellectual influences; or the wondrous intellectual vigour of the Arab of Bagdad or Cordova: affords no scale by which to gauge the immobility of the Tartar on his native steppe, or the Arab in his desert wilderness. Without agriculture or any idea of property in land, destitute of the very rudiments of architecture, knowing no written law or any form of government save the patriarchal expansion to the tribe of the primitive family ties: we can discern no change or progress in the wild nomade, though we trace him back for three thousand years. Even the numerical

progression is so partial and intermittent, that had we no other knowledge to guide us, it would be as easy to believe that these nomades had wandered over their desert homes for thirty thousand as for three thousand years. Migratory offshoots of the hordes of Central Asia, and of the wanderers of the Arabian desert, have gone forth, to prove the capacity for progress of the least progressive races; but the great body tarries still in the wilderness and on the steppe, to prove what an enduring capacity man also has to live as one of the wild fauna of the waste.

The Indians of the New World, whencesoever they derived their origin, present to us just such a type of unprogressive life as the nomades of the Asiatic steppe. The Red-Indian of the North-West exhibits no change from his precursors of the fifteenth century; and for aught that appears in him of a capacity for development, the forests of the American continent may have sheltered hunting and warring tribes of Indians, just as they have sheltered and pastured its wild herds of buffalos, for countless centuries since the continent rose from its ocean bed. That he is no recent intruder is indisputably proved alike by physical and intellectual evidence. On any theory of human origin, the blended gradations of America's widely diversified, indigenous races, demand a lengthened period for their development; and equally, on any theory of the origin of languages, must time be prolonged to admit of the multiplication of mutually unintelligible dialects and tongues in the New World. It is estimated that there are nearly six hundred languages, and dialects matured into independent tongues, in Europe. The known origin and growth of some of these may supply a standard whereby to gauge the time indicated by such linguistic multiplications of tongues. But the languages of the American continents have been estimated to exceed twelve hundred and sixty. These include agglutinate languages of peculiarly elaborate structure, and inflectional forms requiring centuries for their development; but also many more suggestive of a long-protracted condition of society, multiplying petty tribes, and fostering the tendency of separated dialects to become mutually unintelligible. Of the grammar of the Lenni-Lenapé Indians, Duponceau remarks: "It exhibits a language entirely the work of the children of nature, unaided by our arts and sciences, and, what is most remarkable, ignorant of the art of writing. Its forms are rich, regular, and methodical, closely following the analogy of the ideas which they are intended to express; compounded, but not confused; occa-

sionally elliptical in their mode of expression, but not more so than the languages of Europe, and much less so than those of a large group of nations on the eastern coast of Asia. The terminations of their verbs, expressive of number, person, time, and other modifications of action and passion, while they are richer in their extension than those of the Latin and Greek, which we call emphatically the *learned* languages, appear to have been formed on a similar but enlarged model, without other aid than that which was afforded by nature operating upon the intellectual faculties of man."[1] At the same time it is no less important to note, along with a highly elaborate structure, the limited range of vocabulary in many of the American languages. Those characteristics, taken along with their peculiar holophrastic power of inflecting complex word-sentences, so as to express by their means delicate shades of meaning, exhibit the phenomena of human speech in some of their most remarkable phases. But the range of the vocabularies furnishes a true gauge of the intellectual development of the Indian: incapable of abstract idealism, realizing few generic relations, and multiplying his words by comparisons and descriptive compounds.

To whatever cause we attribute such phenomena, much is gained by being able to study them apart from the complex derivative elements which trammel the study of European philology. Assuming for our present argument the unity of the human race, not in the ambiguous sense of a common typical structure, but literally, as the descendants of one stock: in the primitive scattering of infant nations, the Mongol and the American went eastward, while the Indo-European began his still uncompleted wanderings towards the far west. The Mongol and the Indo-European have repeatedly met and mingled. They now share, unequally, the Indian peninsula and the continent of Europe. But the American and the Indo-European only met after an interval measurable by thousands of years, coming from opposite directions, and having made the circuit of the globe.

The Red Man, it thus appears, is among the ancients of the earth. How old he may be it is impossible to determine; but among one American school of ethnologists, no historical antiquity is sufficient for him. The earliest contributions of the New World to the geological traces of man were little less startling, when first brought to light, than any that the European drift has since

[1] *American Philosophical Transactions*, N. S. vol. iii. p. 248.

revealed. The island of Guadaloupe, one of the Lesser Antilles, discovered by Columbus in 1493, furnished the first examples of fossil man, and of works of art, embedded in the solid rock. They seemed to the wondering naturalist to upset all preconceived ideas of the origin of the human race. But more careful investigation proved the rock to be a concretionary limestone formed from the detritus of corals and shells. The skeletons are probably by no means ancient, even according to the reckoning of American history; though supplying a curious link in the palæontological treasures both of the British Museum and the Jardin des Plantes. Dr. Lund, the Danish naturalist, has described human bones, bearing, as he believed, marks of geological antiquity, found along with those of many extinct mammals, in the calcareous caves of Brazil. Fossil human remains have also been recovered from a calcareous conglomerate of the coral reefs of Florida, estimated by Professor Agassiz to be about 10,000 years old;[1] and the Academy of Natural Sciences of Philadelphia treasures the *os innominatum* of a human skeleton, a fragment of disputed antiquity, dug up near Natchez, on the Mississippi, beneath the bones of the megalonyx.[2]

From those, and other discoveries of a like kind, this at least becomes apparent, that in the New World, as in the Old, the closing epoch of geology must be turned to for the initial chapters alike of archæology and ethnology. According to geological reckoning, much of the American continent has but recently emerged from the ocean. Among the organic remains of Canadian post-tertiary deposits are found the *Phoca, Balæna,* and other existing marine mammals and fishes, along with the *Elephas primigenius,* the *Mastodon Ohioticus,* and other long-extinct species belonging to that period in which our planet was passing through the latest transitional stage, prior to its occupation by man. Looking on the human skeletons of the Guadaloupe limestone in the Museums of London and Paris,—the first examples of the bones of man in a fossil state,—we cannot fail to be impressed with the feeling that, judged of by such remains, the gradation in form between man and other animals is such as to present no very important contrast to the uninstructed eye. Modern though those rock-embedded skeletons are, they lessen our incredulity as to older traces of human remains mingling with those of extinct mammals, and present both as sharers in a common sepulchre.

[1] *Types of Mankind.* P. 352.
[2] *Proceed. Acad. Nat. Sc. Philad.* Oct. 1846. P. 107.

This novel phenomenon of fossil human bones may fitly serve as an index of the mightiest change which has transpired upon our planet since it became the theatre of life. Genera and species have come into being, multiplied through countless ages, and then given place to others. But now, for the first time, there appears among the relics of former existence traces of that latest creation, when God introduced into earth's varied life a reasonable soul, the heir of immortality. Man entered on the occupation of the New World in centuries which there, as in older historic regions, stretch backward as we strive to explore them. His early history is lost, for it is not yet four centuries since the Red man and his western world were made known to us; and he still exists as he did then, a being apart from all that specially distinguishes either the cultivated or the uncultured man of Europe. His continent, too, has become the stage whereon are being tested great problems in social science, in politics, and in ethnology. There the civilized man and the savage have been brought face to face, to share together the bounties of nature and art, and to test anew how far God "giveth to all life, and breath, and all things; and hath made of one blood all nations of men to dwell on all the face of the earth; and hath determined the times before appointed, and the bounds of their habitation." There, too, the black man and the red, whose destinies seemed to separate them wide as the world's hemispheres, have been brought together to try whether the African is more enduring than the indigenous American on his own soil; to try for us, also, as could no otherwise be tried, questions of amalgamation and hybridity, of development and perpetuity of varieties of a dominant, a savage, and a servile race. In all ways: in its recoverable past, in its comprehensible present, in its conceivable future, the New World is a great mystery; and even glimpses into its hidden truths reflect some clearer light on secrets of the older world.

CHAPTER II.

THE NEW WORLD.

THE LATEST MIGRATIONS — FOUNDING A CAPITAL — THE INFANT CITY — BEGINNINGS OF HISTORY — SUPERIOR CITY — ENTERING ON HISTORIC LIFE — PREHISTORIC PHASES.

THE striking contrasts which the New World presents, in nearly every respect, to the Old, are full of significance in relation to the origin of civilisation, and its influence on the progress of man. Viewed merely as the latest scene of migration of European races on a great scale, America has much to disclose in illustration of primitive history. There we see the land cleared of its virgin forest, the soil prepared for its first tillage, the site of the future city chosen, and the birth of the world's historic capitals epitomized in those of the youngest American commonwealths. Taking our stand on one of the newest of these civic sites, let us trace the brief history of the political and commercial capital of Upper Canada.

Built along the margin of a bay, enclosed by a peninsular spit of land running out from the north shore of Lake Ontario, the city of Toronto rests on a drift formation of sand and clay, only disturbed in its nearly level uniformity by the rain-gullies and ravines which mark the courses of the rivulets that drain its surface. This the original projectors of the city mapped off into parallelograms, by streets uniformly intersecting each other at right angles; and in carrying out their plan, every ravine and undulation is smoothed and levelled, as with the indiscriminating precision of the mower's scythe. The country rises to the north for about twenty miles, by a gradual slope, to the water-shed between Ontario and Lake Simcoe, and then descends to the level of the northern lake and the old hunting-grounds of the Hurons. It is

a nearly unvarying expanse of partially cleared forest: a blank, with its Indian traditions effaced, its colonial traditions uncreated. But industry already plies the willing hand. Sturdy enterprise enlivens its rivers with the noise of the busy wheel, and fashions its forest glades into smiling villages and rising towns. Its history is not only all to write, it is all to act. The cities of the old world have their mythic founders and quaint legends, still commemorated in heraldic blazonry. But there is no mystery about the beginnings of Toronto, and little romance in its childhood and youth. Upper Canada was erected into a distinct province in 1791, only eight years after, by the Treaty of Fontainebleau, France had finally renounced all claim on the province of Quebec; and a few months thereafter General Simcoe, the first governor of the new province, arrived at the old French fort, at the mouth of the Niagara river, and in May 1793 selected the Bay of Toronto as the site of the future capital. The chosen spot presented a dreary aspect of swamp and uncleared pine forest; but amid these his sagacious eye saw in anticipation the city rise, which already numbers upwards of 50,000 inhabitants; and rejecting the old Indian name, since restored, he gave to his embryo capital that of York. Colonel Bouchette, Surveyor-General of Lower Canada, was selected to lay out the projected city and harbour; and from his pen we have a graphic account of the locality as it then existed, and of the rites, accordant with ancient Saxon hospitality, by which the founder dedicated the forest-clearing to the amenities of civilisation. "It fell to my lot," says Colonel Bouchette, "to make the first survey of York harbour in 1793. Lieut.-Governor the late General Simcoe, who then resided at Niagara, having formed extensive plans for the improvement of the colony, had resolved on laying the foundations of a provincial capital. I still distinctly recollect the untamed aspect which the country exhibited when first I entered the beautiful basin. Dense and trackless forests lined the margin of the lake, and reflected their inverted images in its glassy surface. The wandering savage had constructed his ephemeral habitation beneath their luxuriant foliage, the group then consisting of two families of Mississagas; and the bay and neighbouring marshes were the hitherto uninvaded haunts of immense coveys of wild-fowl; indeed, they were so abundant as in some measure to annoy us during the night."[1]

[1] *The British Dominions in North America.* Lond. 1832. Vol. i. p. 89.

The vicissitudes attending the progress of the Canadian city have been minutely chronicled by its local historians, who record how many dwellings of round logs, squared timber, or more ambitious frame-houses exceeding a single storey, were in existence at various dates. The first vessel which belonged to the town, and turned its harbour to account; the first brick house, the earliest stone one; and even the first gig of an ambitious citizen, subsequent to 1812: are all duly chronicled. Could we learn with equal truthfulness of the first years of the city built by Romulus on the Palatine Hill, its annals would tell no less homely truths, even now dimly hinted at in the legend of the scornful Remus leaping over its infant ramparts. Tiber's hill was once the site only of the solitary herdsman's hut; and an old citizen has described to me his youthful recollections of Toronto, as consisting of a few log-huts in the clearing, and an Indian village of birch-bark wigwams, near the Don, with a mere trail through the woods to the old French fort, on the line where now upwards of two miles of costly stores, hotels, and public buildings mark the principal street of the busy city. But in 1813 an important historical event occurred. General Dearborn at the head of an army of American heroes, numbering some two thousand five hundred men, embarked on board their fleet at Sacket's Harbour, for the siege of York, and the conquest of Canada. The little capital, with its round log, squared timber, and frame houses, numbered scarcely a hundred dwellings in all. These the invaders set fire to, carried off its solitary fire-engine; and the latter is reported to be still among the trophies preserved in the Navy Yard of the United States.

After such a disastrous erasure of all that the first twenty years had laboriously accomplished, it is easy to see how the abortive city might have been resigned ere this to forest and swamp, and scarcely a trace have remained to tell that civilisation had ever meditated making the site her own. After the lapse of another twenty years, M. Theodore Pavi describes it, in his *Souvenirs Atlantiques*, published at Paris in 1833, as still in the woods, a mere advanced post of civilisation on the outskirts of a boundless waste. "To the houses of York," says he, "succeed immediately the forests, and how profound must be those immense forests, when we reflect that they continue without interruption till they lose themselves in the icy regions of Hudson's Bay near

the Arctic Pole." Upwards of a quarter of a century has since elapsed, and that for New-World cities is an æon. Every year has witnessed more rapid strides, alike in the progress of Toronto, and in the clearing and settling of the surrounding country. Railways have opened up new avenues of trade and commerce, and borne troops of sturdy pioneers into the wilderness behind. So rapid has been the clearing of the forest, and so great the rise in the price of labour, that fuel, brought from the distant coal-fields of Ohio, already undersells the cord-wood hewn in Canadian forests; and even Newcastle coal warms many a luxurious winter hearth. All is rife with progress. The new past is despised; the old past is unheeded; and for antiquity there is neither reverence nor faith. These are beginnings of history; and are full of significance to those who have wrought out some of the curious problems of an ancient past, amid historic scenes contrasting in all respects with this unhistoric but vigorous youth of the New World. And yet, as we shall see, it is not altogether new; though we thus witness the seeds of future empires taking root on its soil. The ancient forests which give way before the axe of the new settler, are not primeval. Beneath their roots lie historic memorials, not even now so thoroughly effaced that we must abandon all hope of recovering the chronicles of that world before Columbus, and learning something of what man was, utterly disassociated from everything which has made of us what we are.

While thus witnessing the progress of the young Canadian capital, it has been my fortune to look on the actual birth of a great city of the future. During the summer of 1855, a western ramble—undertaken in part for the purpose of exploring traces of a long-forgotten history, recorded in a subsequent chapter devoted to the elucidation of the mining and metallurgy of America's copper period,—terminated at Fond du Lac, at the head of Lake Superior. Here, at the mouth of the Nemadji river, on a large bay into which the St. Louis and Aloues rivers also debouche, the site of the future city of Superior has been selected. I had traversed nearly four hundred miles since leaving the Sault Ste. Marie, itself a remote outpost of civilisation; and had noted with curious interest, in proof of our wandering into uncultivated wilds, that part of the freight of the steamer to Eagle Harbour consisted of compressed bundles of hay, brought

from Detroit on Lake St. Clair, upwards of three hundred miles off, for the use of the cattle employed at the copper mines. Hundreds of miles of unoccupied land lay between the Nemadji river and the nearest settlements of Wisconsin or Minnesota, and countless millions of acres stretched away westward and northward towards the Rocky Mountains and the pole. Yet here, on the wild hunting-grounds of the Chippewas, the future Superior City was being laid off with a large expanse of "water-lots,"—a term of universal acceptance among Anglo-Americans in reference to spots mapped off for redemption from river or lake. A plan, already completed, showed them encroaching on the channel of the river, and abridging the wide expanse of Superior Bay: a singularly characteristic type of the intrusive race which is everywhere supplanting the Indian on his native soil. A party of Saultaux had constructed a group of birch-bark wigwams on Minnesota Point, and their slight canoes glided noiselessly over the bay. Such the Indian of the Fond du Lac may have been a thousand years ago: as unprogressive and ephemeral in all his characteristics as he there appeared. The little spot on which his wigwam stands suffices for him, as it has done for all his fathers; and, for the rest, he claims only a small tribute from the denizens of lake and forest, wild as himself. But for the aggressive aspirations of the intruder nothing is too great; and indeed such is the faith in the great future which awaits this most western embryo metropolis of the lakes, that two rival cities were already projected within a mile or two of each other. One of these, consisting of an unfinished frame house and two or three log-shanties, was named SUPERIOR; the other, if possible in a still more rudimentary condition of development, had already engrossed the more ambitious name of SUPERIOR CITY. Yet one or other of these is unquestionably the nucleus of a great metropolis, destined ere another generation passes away, to number its inhabitants by thousands, where now only the wigwam of the Indian and the bivouac of the hunter are to be seen. In the coarse realities of conflict between rival speculators and scheming projectors, it is difficult for us to realize what may be abundantly manifest to other generations: that here, in the wild west, is an event akin to that when Nimrod, the primeval hunter, began his kingdom of Babel in the land of Shinar.

Already the axe of the pioneer is levelling the forest, and clearing out the thoroughfares of the future city; while plans are in

progress for making it the starting-point of a railway to the Mississippi, where it rolls its mighty volume of waters uninterruptedly to the Gulf of Florida. The scheme cannot fail; for it is only restoring, with greatly augmented facilities, the ancient route by which, as will be seen, the metallic treasures of Lake Superior were distributed by ante-Columbian traders through the vast regions watered by the Mississippi and its tributaries; and tropical shells, and other products of southern latitudes, were transferred to the shores of the northern lakes. It is impossible to look with indifference on such an initial stage of one of the great revolutions begot by civilisation amid the western wilds. We can only guess at the beginnings of ancient cities and empires; but here we are present at the birth, and look on the first clearings, the rude shanty, the temporary pier and corduroy road for the city in embryo, destined to be what Chicago has proved for Lake Michigan, perchance what St. Petersburg has been for the Neva and the Baltic, or Alexandria once was, and may yet again be, for the Nile.

Viewed in this light, the remarkable features of Superior Bay and its tributary rivers with their spits and sand-belts, possessed a peculiar charm, thus seen, as it were, at the close of one great cycle of their history, the gradual formation of ages, and still untouched by the hand of man. The frail village of wigwams and the tiny fleet of birch-bark canoes, only added a characteristic feature to the wild face of nature. In this, as in so many other respects, no more striking contrast could be presented to the historic rivers of Europe, with their dikes, and piers, and breakwaters, the monuments of enterprise and engineering skill: pertaining, like the dikes of the Essex marches on old Father Thames, to a date nearly coeval with the Christian era; or reaching back, like those of the African Nile, to the birth-time of history and the infancy of the human race. The contrast between the new and the old is here sufficiently striking. Yet the old also was once new; had even such beginnings as this; and was as devoid of history as the rawest clearing of the Far West.

There are other aspects also in which a New World, thus entering on its historic life, is calculated to throw light on the origin of civilisation. Though neither its forests nor its aborigines are primeval, they realize for us just such a primitive condition as that in which human history appears to begin. In all the most

characteristic aspects of the Indian, discussed in subsequent chapters; as well as in the traces of native American metallurgy, architecture, letters, and science: we shall find reproduced the same phases through which man passed in oldest prehistoric times; and when, in the fifteenth and sixteenth centuries, we witness the mineral wealth of the Andes tempting European colonisation beyond the Atlantic, we only see the expeditions of new Argonauts; and realize incidents of the first voyage to the Cassiterides; or the planting of the infant colonies of Gadir, Massala, and Carthage by Phœcian and Punic adventurers of the historic dawn.

CHAPTER III.

THE PRIMEVAL TRANSITION.

THE PRIMEVAL FOREST—THE GENESIS OF MAN—NON-METALLURGIC ERAS—OSCILLATIONS OF THE LAND—THE FLINT-FOLK OF THE DRIFT—ADVENT OF EUROPEAN MAN—THE DRIFT IMPLEMENTS—CHRONOLOGY OF THE FRENCH DRIFT—SCOTTISH ALLUVIUM—PRECELTIC RACES—THEIR IMITATIVE ARTS—MAN PRIMEVAL—HIS INTELLECTUAL CONDITION—INSTINCT—ACCUMULATED KNOWLEDGE—PRIMEVAL BRITAIN—ITS FOSSIL FAUNA—BONE IMPLEMENTS—FOOD—AMERICAN DRIFT—RELICS OF ANCIENT LIFE—EXTINCT FAUNA—MAN AND THE MASTODON—INDIAN TRADITIONS—GIANTS—DRIFT DISCLOSURES—ANTIQUITY OF THE AMERICAN MAN—PRIMITIVE ARTS.

On the busy scene of the Western Canadian capital, little more than half a century ago, stood, as we have seen, the wigwam of the Red Man, and the forest swept like a leafy sea back from the shores of the great lakes to the Arctic circle. At times a little more remote, within the last three centuries, the same was the case on every civic site of the New World. We call the forest primeval, and we speak of the savage as the child of nature. But we do neither in any very strict or scientific sense. What, indeed, is the natural condition of man, is even now by no means a settled point.

But it cannot be overlooked that, while America discloses an interesting phase of primitive social life: the life of the forest savage, inherited from an ancient past; beyond this lie half-obliterated traces of an extinct civilisation, with memorials of rites and mythology, which suggest comparisons with the oldest chronicles of social life in Egypt, India, and China. Nor are illustrations of the first crude efforts of intellect, and the rudimentary traces of art, peculiar to ancient races, or to be sought for only in primitive times. They remain as expressive still in the ingenuity of the Red Indian arrow-maker or pipe-sculptor, as when they puzzled the observant credulity of Herodotus, or dignified to Tacitus the chroniclings of Rome's barbarian conquests. We

cannot, indeed, with all their aid, demonstrate man's primeval condition, or the probable duration of the race; but they supply very significant analogies to recently discovered works of art of the cave-breccias and the drift, which tell us all that we yet know by means of geological revelations in reference to primeval man. In the moral contrast which the savage presents to our conceptions of Edenic life, no less curious questions are suggested as to the intellectual endowments requisite for any consistent theory of Adamic creation.

Without looking for systems of science in the Bible, which it was never designed to furnish, either in relation to the organic or inorganic world: we nevertheless derive from thence incidental notices of the highest value in reference to the genesis of man. The geologist may turn aside from the Mosaic record as a book never designed for his aid, but the ethnologist cannot do so, unless he is prepared entirely to reject its authority; for man is its theme, and the earth's creation is only considered there in so far as it relates to him. Moreover, there only can he look for any authoritative information relative to the origin of our race. If that is rejected, there remain for us only the vague inductions of science on a point beyond its ken; or the childish fables of tradition, in which the intellectual Greek and the untutored savage are on a par. There, then, we learn of primeval man as no savage, but a being of intellectual power and moral purity; and other records seem to point towards the same eastern area indicated there as the birthplace of the nations. But, also, the further investigations are pursued in other directions, the more clearly does it seem to be forced on our acceptance, that the primitive condition of man included none of those appliances of inventive skill associated with all modern ideas of civilisation and intellectual progress; but, on the contrary, the analogies to his earliest arts reappear in those of the modern savage. It becomes important, therefore, to inquire how far such seemingly contradictory indications admit of reconcilement, or tend to favour the idea of man being merely the latest result of physical processes by which the lowest have been transmuted into all higher forms of animal life.

The investigation of the underlying chronicles of Europe's most ancient human history, has placed beyond question that its historic period was preceded by an unhistoric one of long duration, marked by a slow progression from arts of the rudest kind to others which involved the germs of all later development. From Europe, and the historic lands of Asia and Africa, we derive our ideas of man;

and of the youngest of these continents, on which he has thus advanced from savage artlessness to the highest arts of civilisation, we have history, written or traditional, for at least two thousand years. But in the year 1492, a New World was discovered, peopled with its own millions, for the most part in no degree advanced beyond that primeval starting-point which lies far behind Europe's oldest traditions. To have found there beings strange as the inhabitants of Swift's Houyhnhnm's Land, or the monsters conjured up in the philosophic day-dreams of Sir Humphry Davy for the peopling of other planets,[1] would have seemed less wonderful to the men of that fifteenth century than what they did find: man in a state of savage infancy, with arts altogether rudimentary; language without letters, tradition without history, everything as it were but in its beginning, and yet man himself looking back into a past even more vast and vague than their own. The significance of this state of things is worth inquiring into, if it be for nothing else than the light which the analogies of such a living present may throw on the infancy of Europe, and beyond that, on the primal infancy of the human race.

Recent discoveries of assumed traces of primeval art in the diluvial formations both of France and England, have tended to add a fresh interest to the investigation of that "primeval stone-period" which underlies the most ancient memorials of Europe's civilisation. We learn from the oldest of all written chronicles, that there existed a period of some duration in the history of the human race, during which man tilled the ground, pursued the chase, and made garments of its spoils, without any knowledge of the working in metals, on which the simplest of all known arts depend. Through such a primitive stage, it had already appeared to me probable that all civilized nations had passed;[2] before disclosures of a still older flint-period in the chroniclings of the drift added new significance to the term *primeval*, in its application to the non-metallurgic era of Europe's arts.

The incredulity and even contempt with which the application of a system of archæological periods to the antiquities of Britain was received, a few years ago, by a certain class of critics, was inevitable, from the exclusive attention previously devoted to Roman and mediæval remains.[3] But the attention of the antiquary, as

[1] *Consolations in Travel, or the Last Days of a Philosopher.*

[2] *Prehistoric Annals of Scotland*, vol. i. p. 41.

[3] Vide Palgrave's *History of Normandy*, vol. i. p. 469; Wright's *Celt, Roman, and Saxon*, pp. vi. vii., etc.

well as the geologist, is now being directed to conclusions forced on both by the discoveries of rudely fashioned flint hatchets and spear-heads in the stratified gravel of post-pliocene formations. The artificial origin of these is maintained on the authority of geologists and archæologists of the highest standing in ability and experience; and the circumstances attending their repeated discovery place their remote antiquity beyond question. The difficulty indeed is to bring the phenomena which their discovery illustrates, into any conceivable harmony with the limits of chronology as hitherto applied to man. The preceltic architects of the British long-barrow, and the allophyliæ of the European stone age, are but men of yesterday in comparison with the FLINT-FOLK OF THE DRIFT. They belong to a lost Atlantis,—another continent, now in part at least buried beneath the ocean; and compared with which the Old World of history is as new as that found for it by Columbus.

The disclosures of geology have familiarized us with the conviction that the "stable land," the "perpetual hills," and the "everlasting mountains" are but figures of speech. But the idea forces itself on reluctant minds that man himself has witnessed the disappearance of Alpine chains and the submergence of continents. The Pacific archipelagos are but the mountain-crests of a southern continent, which in earlier ages may have facilitated the wanderings of the nations. The startling discoveries in the French and English drift are results of oscillations of the northern hemisphere, which, in times nearer to historic centuries, depressed the bed of the Baltic in the era of the Danish kjökkenmöddingr, and made dry land of the upper estuaries of the Forth and Clyde. It is doubtful, indeed, if the shallowing of Danish and Scottish seas by the rise of their ocean beds is altogether a work of prehistoric times. The rise still going on in parts of the Swedish coast is a phenomenon long familiar to geologists; and the upheaval of the Scottish region embracing the valleys of the Forth and Clyde, it now appears probable has been protracted into historic times, and has even affected the relative levels of sea and land since the building of the Roman wall.

The changes thus witnessed on a comparatively small scale, on familiar areas, help us in some degree to estimate the vast physical revolutions that have taken place throughout the northern hemisphere within that recent geological period which succeeded the formation of the pliocene strata. Throughout extensive regions

both in Europe and America, vast glacial formations of stratified drift have effected the latest modifications, prior to the recent superficial soil which overlies the fossiliferous strata. In a chronological point of view those glacial formations are separated by an immense interval from any conceivable historic epoch; and every attempt to reconstruct the geographical features of Northern Europe in that era of the drift, and to repeople it with its fossil fauna, adds to the proof that, in climate, physical contour, and zoological characteristics, it differed little less widely from the condition of the same regions within any known period of the human epoch, than it is possible for imagination guided by the disclosures of science to conceive. Nevertheless it is to this period that the geologist assigns the advent of the Flint-Folk of the Drift: a race of hunters and fishers not greatly differing in their rude arts from the more immediate precursors of the Historic Races in Europe's Stone Age; but who nevertheless were contemporaneous with the Siberian mammoth and other extinct elephants, the woolly rhinoceros, the musk ox, and the reindeer; and with numerous extinct carnivora of proportions corresponding to the gigantic herbivora on which they preyed.

The regions in which remains of the Flint-Folk have hitherto chiefly occurred embrace the pleasant valleys of Northern France and Southern England, where now the vine and the hop clothe the sunny slopes with their luxuriance. But as fresh evidence accumulates, corresponding traces are found to extend to the shores and islands of the Mediterranean, where history and civilisation had their birth. We search in vain, however, for any connecting link between the oldest of historic races and those belonging to an era which one distinguished geologist has designated as "The Second Elephantine Period;"[1] when, according to his reconstruction of the physical geography of the region, the Thames was a tributary of the Rhine. The English channel therefore was not yet in being. Britain existed only as part of a continent which stretched away uninterruptedly northward towards the Arctic circle. The upheaval which made dry land of the bed of the present German Ocean, and of much of that of the neighbouring Atlantic, was accompanied with a corresponding elevation of the mountains of Scotland and Wales. Those accordingly constituted Alpine ranges on which the ice and snows of a perpetual winter reigned; and where the whole glacial phenomena, studied at the present day in

[1] J. Trimmer: *Jour. Geol. Soc.*, vol. ix.

Norway and Switzerland, were in active operation. The drift deposited by icebergs during a previous submergence was then excavated by the descending glaciers, which as they receded left to the hills and valleys their present contour. Rivers also, fed from the same source, bore along with them the transported material, in the same way as the Rhine and the Rhone are freighted with spoils from the Swiss Alps; and redisposing those in their lower estuaries, they embedded in the new formation remains of contemporaneous fauna, and with them the flint-implements of a race of men who had already peopled the valleys and river-banks.

It thus appears that the advent of man in Northern Europe is assignable to a period when the mastodon and the tichorine rhinoceros still roamed its forests, and the Great Cave-tiger and other extinct carnivora haunted its caverns; when the gigantic Irish elk, the reindeer, the musk-buffalo, and the wild horse were objects of the chase; and the hippopotamus major was a summer visitor to the Seine and the Thames. Fourteen years ago, when describing Scottish aboriginal traces, I remarked: "There is one certain point in this inquiry into primitive arts which the British antiquary possesses over all others, and from whence he can start without fear of error. From our insular position it is unquestionable that the first colonist of the British Isles must have been able to construct some kind of boat, and have possessed sufficient knowledge of navigation to steer his course through the open sea."[1] It seemed a postulate on which the most cautious adventurer into the great darkness which lies behind us might confidently take his stand. But the point was no certain one after all. The fauna of the later Elephantine period still roamed over a wide continent unbroken by the English Channel or the Irish Sea; and the valley of the Rhine stretching northward through the still unsubmerged plain of the German Ocean, received as tributaries the Thames and the Humber; perhaps also the Tweed and the Forth. Measured therefore by the most moderate estimate of geological chronology, the historical period is, in relation to the interval since the first appearance of man, somewhat in a ratio with the superficial soil and vegetable mould, as compared with the whole deposits of the stratified drift: in other words, it is so insignificant as, in a geological point of view, to be scarcely worth taking into account.

Whatever be the consequences involved in such comprehensive inductions, proofs appear to accumulate with every renewed

[1] *Prehistoric Annals of Scotland*, 1st Ed. p. 29.

search, of the wide diffusion throughout the bone-bearing drift of the Elephantine period, of symmetrically-formed flints, bearing indubitable traces of intelligence and primitive mechanical skill.

It is the old argument of Paley, reproduced in a form undreamt of in his philosophy. "If," he might have said, "in digging into a bank of gravel we find a flint, we do not pause to ask whence it came; but if our spade strike on a watch?"——In the age of the Flint-Folk mechanical ingenuity expended itself for other purposes than the manufacture of time-measurers; but if the artificial origin of the implements of the drift be acknowledged, our greatest difficulty is the length of time they indicate. On this subject, then, I may say that, after an intimate familiarity for upwards of twenty years, with the flint and stone implements of Britain and the North of Europe; and collecting in more recent years hundreds of specimens on the American continent: I had an opportunity for the first time, in 1864, of examining both in France and England several large collections of flint-implements from the drift. They differ for the most part in size, and also in type, from those found in early British or Danish grave-mounds; but artificial origin and inventive design are as obvious in the one as in the other.

That forgery of drift-implements has been systematically practised latterly by the French workmen is indisputable, but this need not affect the question. The facts connected with their discovery had been on record for nearly a century and a half before their significance was perceived; and specimens have lain unheeded in the British Museum and in the collections of the Society of Antiquarians of London, with their human workmanship undisputed, so long as their origin was ascribed to Celtic art.[1] In reality the explorers of the drift have been perplexed by the very abundance of the traces of art which it discloses. Dr Rigollot states that in the pits of St. Acheul alone, between August and December 1854, upwards of four hundred specimens were obtained. The lowest estimate of the number recovered in the valley of the Somme is 3000; but this is exclusive of the more dubious flint-flakes, styled knives, estimated by Sir Charles Lyell at many thousands more.[2] In England flint implements of the same peculiar type have already rewarded research in many localities; so that Mr. Evans justly remarks: "The number found is almost beyond belief."[3] But the most interesting feature attendant on the later English discoveries

[1] *Archæologia*, vol. xiii. p. 206; vol. xxxviii. p. 301.
[2] *Antiquity of Man*, p. 144. [3] *Archæologia*, vol. xxxviii. p. 296.

is, that the traces of man have there been successfully sought for on purely geological evidence. The archæologist digs into the Celtic or Saxon barrow, and finds as his reward the implements and pottery of its builder. But English geologists, having determined the character of the tool-bearing gravel of the French drift, have sought for the flint implements in corresponding English strata, as they would seek for the fossil shells of the same period, and with like success. They have now been obtained in Suffolk, Bedford, Hartford, Kent, Middlesex, and Surrey.[1] So entirely indeed has the man of the drift passed out of the province of the archæologist, that Mr. Prestwick follows up his "notes on further discoveries of flint implements in beds of post-pliocene gravel and clay," in 1861, with a list of forty-one localities where gravel and clay-pits, or gravel-beds occur, as some of the places in the south of England where he thinks flint implements may also by diligent search possibly be found, and subsequent discoveries have confirmed his anticipations.

The only element which tends in any degree to detract from the incontrovertible force of this accumulated proof is that wherever the wrought flints are discovered *in situ*, they appear to occur in beds of gravel and clay abounding in unwrought flints in every stage of accidental fracture, and including many which the most experienced archæologist would hesitate whether to classify as of natural or artificial origin. If, therefore, only a few widely scattered spear head and almond-shaped flints had been found, the theory of their accidental fracture into such regular shapes might be entertained, notwithstanding the absence of any natural tendency in the conchoidal fracture of the flint to develop such types. But the same artificial forms are repeated by thousands; and so far as appears at present, they occur in the river valleys, where the experience of the archæologist would lead him to look for the traces of rude hunting and fishing tribes; and in the same mammaliferous strata to which that of the geologist directs him when in search of remains illustrative of the extinct fauna of the post-pliocene age. Without, therefore, attempting to reduce this geological chronology to years, or even to centuries, it obviously points to an era lying entirely beyond the province of the historian.

The relative chronology of the French drift is: 1*st*, superficially, tombs and other remains of the Roman period, scarcely perceptibly affected in their geological relations by nearly the whole interval

[1] *Journ. Geol. Soc. Lond.*, vol. xvii. pp. 322, 368; vol. xviii. p. 113, etc.

of the Christian era; 2*d*, in the alluvium, seemingly embedded by natural accumulation, at an average depth of 15 feet, remains of the European stone-period, corresponding to those of the recently discovered pfahlbauten, or lacustrine villages of the Swiss Lakes; and, 3*d*, the tool-bearing gravel, embedding works of the Flint-Folk, wrought seemingly when the rivers were but beginning the work of excavating the valleys which give their present contour to the landscapes of France and England.

With such indications of the remoteness of the era of the Drift-Folk it scarcely calls for special notice, that their tools correspond to some of those found in the cave-deposits, as in Kent's Hole, Devonshire; but that they are readily distinguishable from the smaller implements and weapons of the same material wrought by the primitive Barrow-Builders of Europe, or by modern savage tribes still ignorant of metallurgy. From whatever point we attempt to view the novel facts thus presented to our consideration, it becomes equally obvious that we are dealing with the traces of a period irreconcilable with any received system of historic chronology; but within which, nevertheless, we are compelled to recognise many indications of the presence of man.

By evidence of a like character, the intermediate but still remote periods of prehistoric centuries are peopled with similar races of men. Proofs of oscillation, upheaval, and derangement of the course of ancient rivers, had furnished indications of the enormous lapse of time embraced within the British stone-period before the discoveries of Abbeville and Amiens were heard of.[1] In the year 1819 there was disclosed in the alluvium of the carse-land, where the river Forth winds its circuitous course through ancient historic scenes, the skeleton of a gigantic whale, with a perforated lance or harpoon of deer's horn beside it. They lay together near the base of Dunmyat, one of the Ochil Hills, twenty feet above the highest tide of the neighbouring estuary. Over this an accumulation of five feet of alluvial soil was covered with a thin bed of moss. The locality was examined at the time, and the levels noted, by scientific observers peculiarly competent to the task; and at the same time sufficient traces of the old Roman causeway were observed, leading to one of the fords of the Forth, to prove that no important change had taken place on the bed of the river, or the general features of the strath, during the era of authentic history.[2] Nor was this example a solitary one. Remains

[1] *Prehist. Annals of Scotland*, 1st Ed., p. 33. [2] *Edin. Phil. Jour.*, i. 395.

of gigantic Balænæ have been repeatedly found; and one skeleton discovered in 1824, seven miles farther inland, was deposited in the Museum of Edinburgh University, along with the primitive harpoon of deer's horn found beside it, which in this instance retained some portion of the wooden shaft by which it had been wielded. Among antique spoils recovered at various depths in the same carse-land, the collection of the Scottish Antiquaries includes a primitive querne, or hand-mill, fashioned from the section of an oak,—such as is still in use by the Indians of America for pounding their grain;—and a wooden wheel of ingenious construction, found with several flint arrow-heads alongside of it.

With such well-authenticated and altogether indisputable evidence already in our possession, the additions made to our grounds for belief in the antiquity of the prehistoric dawn of Britain or Europe, do not materially affect the conclusions thereby involved, though they add to the apparent duration of the human era. Whatever difficulties may seem to arise from the discoveries at Abbeville and Amiens, or the older ones at Gray's Inn Lane, Hoxne, and elsewhere, in relation to the age of man: the chronology which suffices to embrace the ancient Caledonian whaler within the period of human history will equally adapt itself to more recent disclosures. And lying, as the Scottish relics did, almost beneath the paving of the Roman causeway: they suffice to show that discoveries relative to the British Celt of Julius Cæsar's time, or to the Romanized Briton of Claudius or Nero, which have hitherto seemed to the antiquary to illuminate the primeval dawn, bear somewhat less relation to the period to which the Dunmyat and Blair-Drummond Moss harpoons belong, than the American aborigines of the fifteenth century do to primeval centuries of the New World. The very question raised anew by such disclosures as the British drift, ossiferous caves, grave-mounds, and chance deposits reveal, is whether the ancient Celt, on whom Roman and Saxon intruded, was not himself an intruder on older allophylian occupants?[1] If he was not, we are left to imagine for his race an antiquity and a history, compared with which the dreams of Merlin and the fables of Geoffrey of Monmouth are credible things.

There is a certain remote epoch in most men's ideas of the past,

[1] This question was first brought forward by the author in an "Inquiry into the Evidence of the Existence of Primitive Races in Scotland prior to the Celtæ."—*British Association Report*, 1850.

by no means uniformly defined, beyond which all becomes vague antiquity, and whatever it may disclose is assumed to have been contemporaneous. The Roman antiquary long dealt with the historic remains of Europe as exclusively his own; just as the Indian of Central America is content to ascribe its ruins to the *antiguos*, and the geologist once referred all organic remains to the Deluge. But this, which was inevitable at an earlier stage of inquiry, when all means for recovery of a knowledge of the past seemed exhausted, resolves itself into a definite recognition of relative antiquity, in no degree calculated to preclude a just estimation of the researches of the Roman antiquary.

With the advent of man antedated in geological eras, the Roman period becomes, in truth, a part of very modern history; and the vast ages computed to have intervened between the two periods baffle the fancy in its efforts to comprehend the links by which they are connected. But crude as are the arts of that primeval age, they are not more so than were those of the New World of the fifteenth century. Recent explorations in the Dordogne Caverns, disclose ingeniously carved bone implements and engraved slates, revealing an imitative skill and æsthetic development akin to that which attracts the notice of the ethnologist in ancient and modern arts of the American man. If by the aid of those singularly interesting disclosures of the caverns of Central France, we do indeed recover traces of the Flint-Folk belonging to an era estimated by some scientific chronologists as antedating our own by 100,000 years, it is of no slight importance to perceive that the interval which has wrought such revolutions on the earth as are recorded in the mammaliferous drift, show man the same reasoning, tentative, and inventive mechanician, as clearly distinguished then from the highest orders of contemporary life of the Elephantine or Cave periods, as he is now from the most intelligent of the brute creation. In truth, so far from arriving by such disclosures any nearer the assumed anthropoid link between man and the brutes, the oldest art-traces hitherto recovered unquestionably belong to a being superior to many savage races of the present day.

Much of the reasoning relative to the characteristics which archæological discoveries assign to man in his primeval condition, originates in an illogical association of the concomitants of modern intellectual and social progress with the indispensable requisites of man's primary condition as created in the Divine image, a being of intellectual and moral purity. It is not neces-

sary for the confirmation of a primeval stone or flint period, that we degrade man from that majestic genesis of our race, when he heard the voice of the Lord God amongst the trees of Paradise and was not afraid. Still less is it requisite that we make of him that "extinct species of anthropoid animal" hastily invented by over-sensitive Mosaic geologists to meet the problematic case of pleistocene products of art. In that primeval transition of the ethnologist in which geology draws to a close and archæology has its beginning, when the old orders of organic life were disappearing to make way for a new and far higher order of beings: amid strange beasts of the earth, cattle, and creeping things, we discern

> "Two of far nobler shape, erect and tall,
> Godlike erect, with native honour clad
> In naked majesty, seem'd lords of all;
> And worthy seem'd: for in their looks divine
> The image of their glorious Maker shone,
> Truth, wisdom, sanctitude, severe and pure,
> Severe, but in true filial freedom placed;
> Whence true authority in men."

But if our modern technological standards are to be the only received tests of intellectual nobility, "his fair large front and eye sublime," with all the grand suggestive picturings of Milton's primeval man, are vain. His arts, though ample enough for all his wants, by such modern standards declare him no better than "the ignoble creature that arrow-heads and flint knives would indicate." He needed no weapons for war or the chase; implements of husbandry were scarcely less superfluous, amid a profusion ampler than the luxuriant plenty of the islands of the Southern Ocean. The needle and the loom were as foreign to his wants as the printing-press or the electric telegraph. What did he want with the potter's wheel, or the sculptor's chisel, or the mason's tools? And if his simple wants did suggest the need of some cutting implement, the flint knife, or

> "Such other gardening tools as art, yet rude,
> Guiltless of fire, had formed,"

harmonize with the simplicity of that primeval life, and its easy toils, far more naturally than the most artistic Sheffield cutlery could do, with all its requisite preliminary processes of mining, smelting, forging, grinding, and hafting the needless tool.

The idea which associates man's intellectual elevation with the

accompaniments of mechanical skill, as though they stood somehow in the relation of cause and effect; and with the intellectual as the offspring, instead of the parent of the mechanical element: is the product of modern thought. The very element which begets the unintellectual condition of the ignoble savage is that his whole energies are expended, and all his thoughts are absorbed, in providing daily food and clothing, and the requisite tools by which those are to be secured; or where, as in the luxuriant islands of Polynesia, nature seems to provide all things to his hand, his degraded moral nature unparadises the Eden of the bread-fruit tree.

A primeval "Stone period" appears to underlie the most remote traces of European civilisation; and not only to carry back the evidence of man's presence to greatly more ancient times than any hitherto conceived of: but to confirm the idea that his earliest condition was one not only devoid of metallurgy, but characterized by mechanical arts of the very simplest kind. But that man was, therefore, of necessity, a savage, is very far from being a legitimate conclusion. The degradation of his moral nature, and not the absence of the arts which we associate with modern luxury and enterprise, made him a savage. The Arab sheikh, wandering with his flocks over the desert, is not greatly in advance of the Indian of the American forests, either in mechanical skill or artistic refinement; yet the Idumean Job was just such a pastoral Arab, but, nevertheless, a philosopher and a poet, far above any who dwelt amid the wondrous developments of mechanical and artistic progress, in the cities of the Tigris or the Euphrates. It is not to be inferred, however, that the whole history of the human race, and each of its separate divisions, is affirmed by the archæologist to disclose a regular succession of periods—Stone, Bronze, and Iron, or however otherwise designated,—akin to the organic disclosures of geology; or that where their traces are found, they necessarily imply such an order in their succession. The only true analogy between the geologist and the archæologist is, that both find their evidence embedded in the earth's superficial crust, and deduce the chronicles of an otherwise obliterated past by legitimate induction therefrom. The radical difference between the palæontologist and the ethnologist lies in this, that the one aims at recovering the history of unintelligent divisions of extinct life; the other investigates all that pertains to a still existent, intelligent being, capable of advancing from his own past condition,

or returning to it, under the most diverse external circumstances. Excepting, therefore, the nature of their evidence, and their mode of using it, all is contrast rather than comparison.

Amid that strangely diversified series of organic beings which pertains to the studies of the geologist, there appears at length one, "the beauty of the world, the paragon of animals,"[1] made in the image of God; a being capable of high moral and intellectual elevation, fertile in design, and with a capacity for transmitting experience, and working out comprehensive plans by the combined labours of many successive generations. In all this there is no analogy to any of the inferior orders of being. The works of the ant and the beaver, the coral zoophyte and the bee, display singular ingenuity and powers of combination; and each feathered songster builds its nest with wondrous forethought, in nature's appointed season. But the instincts of the inferior orders of creation are in vain compared with the devices of man, even in his savage state. Their most ingenious works cost them no intellectual effort to acquire the craft, and experience adds no improvements in all the continuous labours of the wonderful mechanicians. The beaver constructs a dam more perfect than the best achievements of human ingenuity in the formation of breakwaters, and builds for itself a hut which the author of the *Decline and Fall of the Roman Empire* justly contrasts in architectural skill with the ruder dwelling of the Asiatic Tartar. The bee, in forming its cell, solves a mathematical problem which has tasked the labours of acutest analysts. But each ingenious artificer is practising a craft which no master taught, and to which it has nothing to add. The wondrous, instinctive, living machine creates for itself the highest pleasure it is capable of, in working out the art with which it is divinely endowed; and accomplishes it with infallible accuracy, as all its untaught predecessors did, and as, without teaching, each newborn successor will do. To such architects and artists history does not pertain, for their arts knew no primeval condition of imperfection, and witness no progress. Of their works, as of their organic structure, one example is a sufficient type of the whole. The palæontologist's relics of preadamite life have been designated by one popular geologist, "the Medals of Creation;" and the term, though borrowed from the antiquary, has a significance which peculiarly marks the contrast now referred to between the objects of study of the geologist and the archæologist.

[1] *Hamlet*, Act ii. sc. 2.

Like medals struck in the same die, the multitude of examples of an extinct species, each exquisitely sculptured coral, and every cast of a symmetrical sigillaria, repeat the same typical characteristics; and the poet's fancy may be accepted as literally true, in relation to the most ingenious arts which engage the study of the naturalist:—

> "All the winged habitants of paradise,
> Whose songs once mingled with the songs of angels,
> Wove their first nests as curiously and well
> As the wood minstrel in our evil day
> After the labour of six thousand years."[1]

But with the relics of human art, even in its most primitive and rudimentary forms, it is otherwise. Each example possesses an individuality of its own, for it is the product of an intelligent will, capable of development, and profiting by experience.

Accumulated knowledge is the grand characteristic of man. Every age bequeaths some results of its experience; and this constitutes the vantage ground of succeeding generations. The deterioration which follows in the wake of every impediment to such transmission and accumulation of knowledge, no less essentially distinguishes man from the ingenious spinners, weavers, and builders, who require no lesson from the past, and bequeath no experience to the future. Man alone can be conceived of as an intelligent mechanician, starting with the first rudiments of art, devising tools, initiating knowledge, and accumulating experience. Whatever, therefore, tends to disclose glimpses of such a primitive condition, and of his earliest acquisitions in mechanical arts and metallurgic knowledge, helps to a just conception of primeval man, and points to the beginning of the race. Let us then glance at the evidence we possess of such an initial stage of being. And first in seeming chronological order are those traces of human arts in the drift, or in ossiferous caves, among the bones of strange orders of beings hitherto supposed to have long preceded the existence of man. In the ancient alluvial deposits—most modern among the strata of the geologist,—lie abundant traces of extinct animal life, belonging to that recent transitional era of the globe in which man was introduced. In nearly all respects they present a contrast to everything we are familiar with in the history of our earth as the theatre of human action. In a zoological point of view they include man and the existing races of animals, as well as extinct

[1] Montgomery, *Pelican Island.*

races which appear to have been contemporaneous with indigenous species. To the archæologist they are rich in records of that primeval transition in which the beginnings of history lie. How early in that closing geological epoch man appeared, or how late into that archæological era the extinct fossil mammals survived, are the two independent propositions which the sister sciences have to establish and reconcile.

The insular character of Great Britain renders it a peculiarly interesting epitome of archæological study, a microcosm complete in itself, and little less ample in the variety of its records than the great continent, divorced from it by the ocean; yet the question, as we have seen, is reopened: Was it already insular when its earliest nomade trod its unhistoric soil? The Caledonian allophylian, as we now know, pursued the gigantic Balæna in an estuary which swept along the base of the far-inland Ochils, and guided his tiny canoe, above an ocean bed, which had to be upheaved into the sunshine of many centuries before it could become the arena of deeds that live associated on the historic page with the names of Agricola, Edward, Wallace and Bruce, of Montrose, Cromwell, and Mar. Its history dawns in an era of geological mutation; yet not more so than such as is now at work in other and neighbouring historic lands. It is a type of the changes which were working elsewhere, and gradually transforming that strange post-tertiary microcosm into the familiar historic Britain of this nineteenth century.

From an examination of its detritus and included fossils, and from the disclosures of peat-mosses, we learn that, at the period when the British Isles were taken possession of by their first colonists, the country must have been almost entirely covered with forests, and overrun by animals long since extinct. In the deposits of marl that underlie the accumulated peat-bogs of Scotland and Ireland, are found abundant remains of the fossil elk, an animal far exceeding in magnitude any existing species of deer. Its bones have been found—at Walton, in Essex, for example,—associated with skeletons of the mastodon, and in the diluvium at Folkstone, with numerous teeth, jaws, and detached bones of the extinct rhinoceros, hippopotamus, hyena, fossil ox, etc.; yet little doubt is now entertained that the elk was contemporaneous with man in the British Isles. Stone hatchets, flint arrow-heads, and fragments of pottery have been recovered alongside of the skeleton, under circumstances that satisfy geologists, as well as archæologists, of their contemporaneous deposition; its

bones have been found with the tool marks of the flint chisel and saw; and evidence of various kinds seems to exhibit this gigantic deer as an object of the chase, and a source of primitive food, clothing, and tools.

Professor Jamieson and Dr. Mantell note the discovery, in the county of Cork, of a human body exhumed from a marshy soil, beneath a peat-bog eleven feet thick. The soft parts were converted into adipocire, and the body, thus preserved, was enveloped in a deer-skin of such large dimensions, as to lead them to the opinion that it belonged to the extinct elk. In 1863, Professor Beete Jukes exhibited to the geological section of the British Association, the left femur, with a portion of one of the tines of an antler, recently dug up in the vicinity of Edgeworthstown, lying in marl, under forty feet of bog. A transverse cut on the lower end of the femur corresponded with another on the antler, by which they appeared to have been adapted for junction. After carefully examining this bone, I entertain no doubt of its having been cut by a sharp tool, and purposely prepared as the haft of the horn blade which lay beside it. When the two were fastened together, they must have made a very formidable weapon. Other bones of this fossil deer have been repeatedly observed to bear marks of artificial cutting; but one of the most interesting evidences of their use in comparatively recent times, was produced at a meeting of the Archæological Institute, June 3, 1864. The Earl of Dunraven then exhibited an imperfect Irish lyre, found in the moat of Desmond Castle, Adare, the material of which was pronounced by Professor Owen to be bone of the Irish elk. Increasing evidence, therefore, appears to confirm the belief that this now extinct species was coeval with the aborigines of the British Islands.

In the same recent formations abundant traces of animals occur having a special interest in relation to our present subject, as not only adapted for the chase, but suitable for domestication. Of the ancient British *Bovidæ*, the remains of the *Bos primigenius* are of frequent occurrence, especially in the alluvial deposits of Scotland. One skull, in the British Museum, from Perthshire, measures a yard in length, and the span of the horns is forty-two inches. Sir Henry de la Beche refers, in the *Geological Observer*, to the discovery, in various submarine forests, of foot-prints mingling with smaller ones of the deer, which he conceives may have been those of the great fossil ox. Of its existence contemporaneously with man no

doubt can be entertained, for its bones are met with in great abundance both in the Danish shell-mounds and the Swiss lake-dwellings; and have been found in British tumuli, and even mingling with Roman remains.

The evidence supplied by the ossiferous caves of England, as of the continents of Europe and America, is full of interest from corresponding revelations. Kirkdale Cave, Yorkshire, has acquired a special celebrity from the description and illustration of its contents, given by Dr Buckland in his *Reliquiæ Diluvianæ*, in connexion with a diluvial theory subsequently abandoned; and Kent's Hole, near Torbay, one of the richest depositories of British fossil carnivora, yielded no less remarkable traces of primitive mechanical arts.

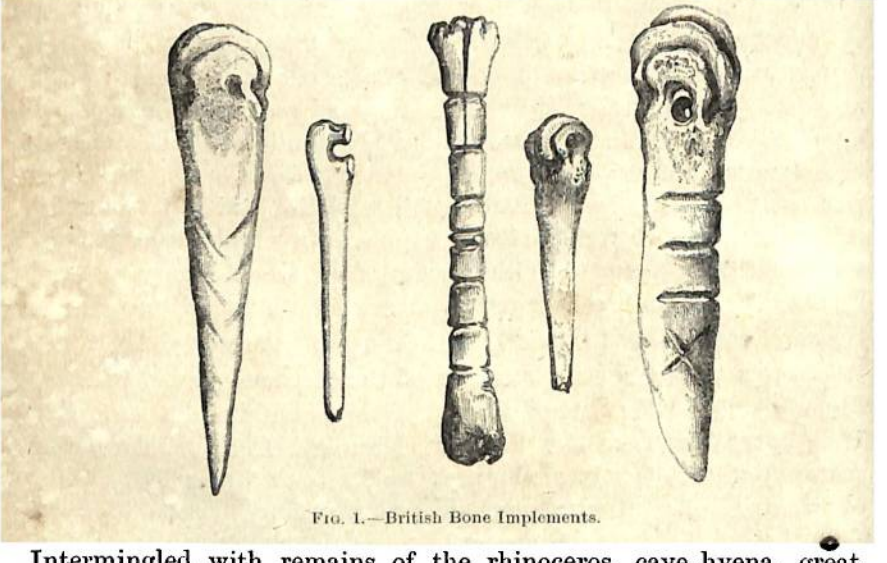

FIG. 1.—British Bone Implements.

Intermingled with remains of the rhinoceros, cave-hyena, great cave-tiger, cave-bear, and other fossil mammalia in unusual abundance, lay numerous implements wrought from their bones; and the investigation of the Brixham Cave, in the same vicinity, in 1858, by competent scientific explorers, guided by the accumulated knowledge and experience of upwards of thirty years, gave precision to the ideas already entertained, of the coexistence of man with the extinct fauna of the caves. His tools of bone, like others found on many primitive British sites, exhibit the most infantile stage of rudimentary art. Fragments of sun-baked urns, and rounded slabs of slate of a plate-like form, were associated with the traces of rude culinary practices, illustrative of the habits and tastes of

the primeval savage. Broken pottery, calcined bones, charcoal, and ashes, showed where the hearth of the allophylian Briton had stood; and along with these lay dispersed the flints, in all conditions, from the rounded mass as it came out of the chalk, through various stages of progress, on to finished arrow-heads and hatchets; while small flint-chips, and partially used flint-blocks, thickly scattered through the soil, served to indicate that the British troglodyte had there his workshop, as well as his kitchen, and wrought the raw material of that primeval stone-period into the requisite tools and weapons of the chase. Nor were indications wanting of the specific food of man in the remote era thus recalled for us. Besides accumulated bones, some at least the spoils of the chase, there lay heaped together near the mouth of the cave a number of shells of the mussel, limpet, and oyster, with a palate of the scarus: indicating that the aborigines found their precarious subsistence from the alternate products of the chase and the spoils of the neighbouring sea.

The same fact is further illustrated by similar relics of a more recent subterranean stone dwelling at Savrock, near Kirkwall, in Orkney, situated, like the natural Torbay cavern, close to the seashore. Accumulated remains of charcoal and peat ashes lay intermingled with bones of the small northern sheep, the horse, ox, deer, and whale, and also with some rude implements illustrative of primitive Orcadian arts; while a layer of shells of the oyster, escallop, and periwinkle, the common whelk, the purpura, and the limpet, covered the floor and the adjacent ground, in some places half a foot deep.

In the interval since I first drew attention to such traces of Scotland's prehistoric centuries, this class of remains has excited special interest; and ancient shell-mounds, analogous to the Kjökenmoodings of Denmark, have been discovered and explored on the coasts of Elgin and Inverness-shire, with similar results. But the additions thus made to our knowledge of primitive ages are slight, in comparison with those recently derived from the exploration of caves in Central France. The Dordogne caverns show man contemporaneous with the reindeer, the fossil elk, and other extinct animals indicative of a totally different climatic condition; devoid apparently of metals; yet engraving representations of natural objects, such as figures of familiar quadrupeds, on plates of deer's-horn; and otherwise furnishing remarkable proofs that the European man of that primeval era stood out with as clear a line of demarcation

from the irrational brute, as the Red man of the New World does at the present time.[1] But the discoveries so replete with interest and value, which thus extend the resources of the European archæologist and anthropologist, are only known to me through the ordinary channels of information; and I turn therefore to another field of study and research, rendered valuable by the contrast which it presents in all ways to that of historic Europe, with its confusing elements pertaining to times when the ambition of Rome so overrode all nationalities, and obliterated the memories of history, that even now it is hard to persuade some men there was a European world before that of the Cæsars.

The city of Toronto, on the northern shore of Lake Ontario, is built on the drift clays which have accumulated above the rocks of the Lower Silurian formation to an average depth of upwards of thirty feet, and in some places to more than seventy feet. The construction of an esplanade along the lake shore of the city, during recent years, exposed a cutting of upwards of two miles in length, and laid bare the virgin soil of the most populous site now devoted to the civilizing processes of European colonization in Upper Canada. The same drift clay and gravel have been exposed in numerous other excavations, but hitherto without disclosures of interest to the archæologist. In one case only, so far as I have been able to ascertain, did any trace of prior human presence appear. At the depth of nearly two feet from the surface, in front of the Parliament buildings, the bones and horn of a deer lay amid an accumulation of charcoal and wood ashes, and with them a rude stone chisel or hatchet. But the travelled fossils of the Toronto drift are of a very different era, and belong to the Hudson river group of the Lower Silurian, like the rocks on which it is superimposed. With varying organic remains embedded in its clay and gravel, the same formation overlies the true fossiliferous rocks of Western Canada; and seems to make of its long stretch of wooded levels and gentle undulations, a country fitted to slumber through untold centuries under the shadow of its pine-forests, a type of the earth of primeval man, until the new-born mechanical science of Europe provided for it the railway and the locomotive, and made its vast chain of rivers and lakes a highway for the steamboat. With such novel facilities added to the indomitable energy of the intruding occupants, the whole face of the continent is in rapid process of transformation; and it is well, ere the change is com-

[1] *Comptes Rendus*, Feb. 29, 1864.

pleted, that some note be made of every decipherable index of the characteristics of a past thus destined to speedy obliteration.

From the uncleared wilds that still occupy the shores of Lake Superior, south-eastward through the great lakes and rivers to the valley of the St. Lawrence, those drift deposits reveal to the geologist marvellous changes that have transpired in that extensive area of the North American continent, through a greatly-prolonged period of what to him are recent times. Along the low shores stretching away from the rapids of Sault Ste. Marie to Lake Superior, huge granitic boulders lie strewed like the wreck of some Titanic Babel; and wherever the waves of the St. Lawrence reopen the deposits along the lower portion of the valley in which they now lie, the sea-bottoms of an ancient ocean are revealed, frequently with littoral or deep-sea shells embedded at different levels in the stratified drift. But remote as is the antiquity, according to all human chronology, to which the fauna of these beds of marine detritus belong, the palæontologist detects among their post-tertiary fossils the phoca, balænæ of more than one species, fishes, articulata, and the shells of many mollusca still inhabiting the neighbouring ocean along the northern Atlantic coasts. The period, therefore, which embraces those relics of ancient life is the same to which man belongs, and they mark for it one of the phases of that last transitional era during which the earth was being prepared for his entrance upon it. Since the natica, fusus, turritella, and other marine animals of the post-pliocene period, were the living occupants of the St. Lawrence valley, vast changes have been wrought on the physical geography of the continent. The relative levels of the sea and land have altered, so as to elevate old sea-margins to the slopes of lofty hills, and leave many hundred miles inland escarpments wrought by the waves of that ancient sea. The conditions of climate have undergone no less important changes, developing in a corresponding degree the new character and conditions of life pertaining to this bed of an extinct ocean: covered with successive deposits of marine detritus, and then elevated into the regions of sun and rain, to be clothed with the umbrageous forest, and to become the dwelling-place through another dimly-measured period, of the wapiti, the beaver, and the bison; and with them, of the Iroquois, the Huron, and the Chippewa: all alike the fauna of conditions of life belonging to a transitional period of the New World preparatory to our own.

Marvellous as are those cosmical revolutions belonging to the

period of emergence of the northern zone of America from the great Arctic Ocean: when we look on each completed whole the process appears to have been characterized by no abnormal violence. Slowly through long centuries the ocean shallowed. The deep sea organisms of a former generation were overlaid by the littoral shells of a newer marine life, and then the tidal waves retreated from the emerging sea-beach; until now we seek far down in the gulf of the St. Lawrence and on the coast of Labrador for the living descendants of species gathered from the post-pliocene drift. Thus the closing epoch of geology in the New World, as in the Old, is brought into contact with that in which its archæology begins; and we look upon the North American continent as at length prepared for the presence of man.

Such records are here noted among the disclosures of the great valley of the St. Lawrence, which drains well-nigh half a continent; for it is in the valleys by which the present drainage of historic areas takes place, that not only such deposits of recent shells and fossil relics of existing fauna occur: but also that the most extensive remains of extinct mammalian fauna are disclosed, in association with objects serving to link them with those of modern eras. In formations of this character have been found, in the lower valley of the Mississippi, the *Elephas primigenius*, the *Mastodon Ohioticus*, the *Megalonyx*, *Megalodon*, *Ereptodon*, and the *Equus curvidens*, or extinct American horse; with many other traces of an unfamiliar fauna, and also a flora, contemporaneous with those gigantic mammifers, but which also include both marine and terrestrial representatives of existing species. Corresponding in its great geographical outlines very nearly to its present condition, the American continent must have presented in nearly all other characteristics a striking contrast to its modern aspect: clothed though it seems to us in primeval forests, and scarcely modified by the presence of man. In the post-pliocene formations of South Carolina, exposed along the bed of the Ashley River, remains of the megatherium, megalodon, and other gigantic extinct mammals occur, not only associated with existing species peculiar to the American continent, but also apparently with others, hitherto believed to have been domesticated and introduced for the first time by modern European colonists. But more interesting for our present purpose, as possibly indicating the contemporaneous existence of some of those strange mammals with man, are notices of remains of human art in the same formation. Professor Holmes, in exhibiting a collection of

fossils from the post-pliocene of South Carolina, before the Academy of Natural Sciences of Philadelphia, remarked: "Dr. Klipstein, who resides near Charleston, in digging a ditch for the purpose of reclaiming a large swamp, discovered and sent to me the tooth of a mastodon, with the request that I should go down and visit the place, as there were indications of the bones and teeth of the animal still remaining in the sands which underlie the peat-bed. Accordingly, with a small party of gentlemen, we visited the doctor, and succeeded not only in obtaining several other teeth and bones of this animal, but nearly one entire tusk, and immediately alongside of the tusk discovered the fragment of pottery which I hold in my hand, and which is similar to that manufactured at the present time by the American Indians."[1] It would not be wise to found hasty theories on such strange juxtaposition of relics, possibly of very widely separated periods. The Ashley River has channeled for itself a course through the eocene and post-pliocene formations of South Carolina, and where these are exposed on its shores the fossils are washed from their beds, and become mingled with the remains of recent indigenous and domestic animals, and objects of human art. But the discovery of Dr. Klipstein was made in excavating an undisturbed, and geologically speaking, a comparatively recent formation. The tusk of the mastodon lay alongside of the fragment of pottery, in a deposit of the peat and sands of the post-pliocene beds. Immediately underneath lie marine deposits, rich with varied groups of mollusca, corresponding to species now living on the sea-coast of Carolina, but also including two fossil species no longer to be met with there, though common in the Gulf of Mexico and the West Indian seas.

Here the palæontology of the New World discloses to us types of a fauna pertaining to its latest transitional period, which serve to illustrate the marvellous contrast between its commencement and its close. Until the discovery of teeth of the megatherium in the post-pliocene bed of the Ashley River, remains of that extinct mammal had been found only in the state of Georgia, in North America, while the *Mastodon Ohioticus* and *Elephas primigenius* are among the well-known fauna of the Canadian drift. Of these, some North American localities have furnished remains in remarkable profusion, but none more so than the celebrated morass in Kentucky, known by its homely but ex-

[1] *Proceedings of the Academy of Natural Sciences, Philadelphia*, July 1859, pp. 178, 186.

pressive name of the Big-bone Lick. Embedded in the blue clay of this ancient bog, entire skeletons, or detached bones, of not less than one hundred mastodons and twenty mammoths, have been found, besides remains of the megalonyx and other extinct quadrupeds. A magnificent skeleton of the *Mastodon Ohioticus*, now in the British Museum, was discovered, with teeth and bones of many others, near the banks of La Pomme de Terre, a tributary of the Osage River, Missouri; and there once more we seem to come upon contemporaneous traces of man. "The bones," says Mantell, who examined them in the presence of Mr. Albert Koch, their discoverer, "were embedded in a brown sandy deposit full of vegetable matter, with recognisable remains of the cypress, tropical cane, and swamp-moss, stems of the palmetto, etc., and this was covered by beds of blue clay and gravel to a thickness of about fifteen feet. Mr. Koch states, and he personally assured me of the correctness of the statement, that an Indian flint arrow-head was found beneath the leg-bones of this skeleton, and four similar weapons were embedded in the same stratum."[1] Another, but more dubious account, preserved in the *American Journal of Science*, describes the discovery in Missouri of the bones of a mammoth, with considerable portions of the skin, associated with stone spear-heads, axes, and knives, under circumstances which suggest the idea that it had been entangled in a bog, and there stoned to death and partially consumed by fire.[2] Such contiguity of the works of man with those extinct mammals, warns us at least to be on our guard against any supercilious rejection of indications of his ancient presence in the New World as well as in the Old.

Whether or not the mammoth and mastodon had been contemporary with man, their remains were objects of sufficiently striking magnitude to awaken the curiosity even of the unimpressible Indian; and traditions were common among the aborigines relative to their existence and destruction. M. Fabri, a French officer, informed Buffon that they ascribed those bones to an animal which they named the *Père aux Bœufs*. Among the Shawnees, and other southern tribes, the belief was current that the mastodon once occupied the continent along with a race of giants of corresponding proportions, and that both perished together by the thunderbolts of the Great Spirit. Another Indian tradition of Virginia told that these monstrous quadrupeds had assembled together, and were

[1] Mantell's *Fossils of the British Museum*, p. 473.
[2] *American Journ. of Science and Arts*, vol. xxxvi. p. 199, First Series.

destroying the herds of deer and bisons, with the other animals created by the Great Spirit for the use of his red children; when he slew them all with his thunderbolts, excepting the big bull, who defiantly presented his enormous forehead to the bolts, and shook them off as they fell; until, being at length wounded, he fled to the region of the great lakes, where he is to this day.

The first notice in an English scientific journal, of the fossil mammals of the American drift, furnishes such a counterpart to the Shawnee traditions of extinct giants of the New World, as might teach a lesson to modern speculators in science; when it is borne in remembrance that the difficulty now is to reconcile the discovery of works of human art alongside of their remains. In 1712, certain gigantic bones, which would now most probably be referred to the mastodon, were found near Cluverack, in New England. The famous Dr. Increase Mather soon after communicated the discovery to the Royal Society of London; and an abstract in the Philosophical Transactions duly sets forth his opinion of there having been men of prodigious stature in the antediluvian world, as proved by the bones and teeth, which he judges to be human, "particularly a tooth, which was a very large grinder, weighing four pounds and three-quarters, with a thigh-bone seventeen feet long."[1] They were doubtless looked upon with no little satisfaction by Dr. Mather, as a striking confirmation of the Mosaic record, that "there were giants in those days." To have doubted the New England philosopher's conclusions might have been even more dangerous then, than to believe them now. Possibly, after the lapse of another century and a half, some of our own confused minglings of religious questions with scientific investigations will not seem less foolish than the antediluvian giants of the New England divine.

In all that relates to the history of man in the New World, we have ever to reserve ourselves for further truths. There are languages of living tribes, of which we have neither vocabulary nor grammar. There are nations, of whose physical aspect we scarcely know anything; and areas where it is a moot point even now, whether the ancient civilisation of central America may not be still a living thing. The ossiferous caves of England have only revealed their wonders during the present century, and the works of art in the French drift lay concealed till our own day. We cannot, therefore, even guess what America's disclosures will

[1] *Philosophical Transactions*, vol. xxiv. p. 85.

be. Discoveries in its ossiferous caverns have already pointed to the same conclusions as those of Europe. A cabinet of the British Museum is filled with fossil bones of mammalia, including those of the scelidotherium, glyptodon, and chlamydotherium, as well as of extinct carnivora, obtained by Dr. Lund and M. Claussen from certain limestone caverns in the Brazils, closely resembling the ossiferous caves of Europe. The relics were embedded in a reddish coloured loam, covered over with a thick stalagmitic flooring; and along with them, in the same ossiferous bed, lay numerous bones of genera still inhabiting the continent, with shells of the large *bulimus*, a common terrestrial mollusc of South America.

No clear line of demarcation can be traced here between the era of the extinct carnivora and edentata, and those of existing species; and there is therefore no greater cause of wonder than in the analogous examples of Europe, to learn that in the same detritus of these Brazilian caves, Dr. Lund found relics of human skeletons, which, from their condition and the circumstances in which they were discovered, he was led to conclude belonged to a tribe coeval with some of the extinct mammalia. Nor have the first disclosures of works of art in the American drift still to be made. I have in my possession an imperfect flint knife, to all appearance as unquestionable a relic of human art as the most symmetrical of those assigned to a similar origin, by the explorers of the French and English drift-gravels. It was given me by P. A. Scott, an intelligent Canadian, who found it at a depth of upwards of fourteen feet, among the rolled gravel and gold-bearing quartz of the Grinell Leads, in Kansas Territory, while engaged in digging for gold. In an alluvial bottom, in the Blue Range of the Rocky Mountains, distant several hundred feet from a small stream called Clear Creek, a shaft was sunk, passing through four feet of rich black soil, and below this, through upwards of ten feet of gravel, reddish clay, and rounded quartz. Here the flint implement was found, and its unmistakably artificial origin so impressed the finder, that he secured it, and carefully noted the depth at which it lay. Another implement of hornstone, now in the collection of the Scottish Antiquaries, was obtained by me from a dealer in Indian curiosities, at Lewiston, in the state of New York, where it was said to have been found, at a great depth, when sinking a well. It is of large size and rude workmanship; and bears considerable resemblance to some of the almond-shaped flints from the European drift. But it also corresponds to a numerous class of implements

procured from the ancient mounds of the Mississippi valley; and probably does not belong to a more remote period than that of those prehistoric monuments of the New World, the characteristics of which are discussed in a later chapter.

Such are some of the indications of the earliest appearance of man in that transitional era, during which the earth was undergoing its final preparation for his presence, as a being endowed not only with the highest form of organic life, but with a rational soul. The evidences of his ancient presence on the American continent, accord with proofs furnished by the multitude of independent languages, and the diversity of types of race, ranging from the Arctic circle to the most southern cape of Tierra del Fuego. But it would be rash to assume from the partial evidence yet obtained, that the juxtaposition of flint arrow-heads with the mastodon of Missouri, the pottery with bones and tusk of the same animal in the post-pliocene of South Carolina, the human bones in the rich ossiferous caverns of the Brazils, or the flint implement recovered from the drift of the Rocky Mountains, are unquestionable evidences of man's existence on the American continent contemporaneously with the extinct mastodon or megatherium. Other evidence, however, points with more or less certainty in the same direction. Sir Charles Lyell looks with greater favour than he once did, on the possible coexistence of man with the mastodon, megalonyx, and other extinct species, among bones of which, in the yellow loam of the Mississippi valley, near Natchez, a human pelvic bone was recovered, and has been made the basis of very comprehensive theories. In the delta of the same river, near New Orleans, a complete human skeleton is reported to have been found, buried at a depth of sixteen feet, under the remains of four successive cypress forests; and this discovery furnishes the data from which Dr. Bennet Dowler assigns to the human race an existence in the delta of the Mississippi 57,000 years ago.[1]

But evidence of this exceptional nature requires to be used with modest caution. Antiquaries of Europe having found tobacco pipes of the sixteenth and seventeenth centuries alongside of pottery and other undoubted remains of Roman art, have hastily antedated the use of tobacco to classic times.[2] On equally good evidence it might be carried back to those of the mastodon, as the discovery of a similar relic has been recorded, at a depth of many feet, in sinking

[1] *Types of Mankind*, p. 272. [2] *La Normandie Souterraine*, p. 76.

a coal-pit at Misk, in Ayrshire.[1] Elaborate investigations on the geological character, and the depth, of the Nile deposits, carried on from 1851 to 1854, under the direction of Mr. Leonard Horner, have supplied data for similar speculations relative to the age of the pottery and burnt brick recovered from various depths. But, whatever value may finally attach to his estimate from such evidence, of the presence of man in the Nile valley from 12,000 to 30,000 years ago; his researches were carried out on a comprehensive scale, by observers well qualified for the task; and the results in no degree invalidate the undisputed assumption that even the rudest traces of art can be referred to no other worker but man.

But looking at the most ancient evidences of artistic invention and mechanical skill in either hemisphere, they all agree in indicating man's first arts to have been of the most primitive kind; and thereby invite to a careful reconsideration of the question how far our modern standards of mechanical ingenuity supply an unvarying or trustworthy test of intellectual development.

[1] *Prehistoric Annals of Scotland*, vol. ii. p. 503.

CHAPTER IV.

SPEECH.

THE REASONING FACULTY—LANGUAGE: ITS ORIGIN—ABSTRACT TERMS—NAMES OF ANIMALS—WILD MEN—BORROWED TERMS—THE MIMETIC ELEMENT—MULTIPLICATION OF WORDS—THE COPTIC VOCABULARY—MA, MAMMA—INDIAN LANGUAGES—THE WHIP-POOR-WILL—DESCRIPTIVE NAMES—INDIAN ONOMATOPŒIA—NAMES FOR NATURAL SOUNDS—EMOTIONAL UTTERANCES—PHONETIC TYPES—ELEMENTS OF LANGUAGE—AGASSIZ ON LANGUAGE—GROWTH OF ROOT-WORDS—NORMAN SPEECH—VOICE OF ANIMALS—VOWEL SOUNDS—LAURA BRIDGEMAN—ASSOCIATED SOUNDS—VOCAL SIGNS OF IDEAS—GRAMMATICAL FORMS—MUTE SIGNS—RUDIMENTS OF VOCAL LANGUAGE—SOUNDS OF DOMESTICATED ANIMALS—PATOIS—WORDS, AND GRAMMATICAL CONSTRUCTION.

THE reasoning by means of which the existence of man in geological periods has been inferred, proceeds mainly on the assumption that he was then, as now, a rational being, manifesting some of the most characteristic attributes by which he is still distinguished from the whole irrational creation. It is consistent with later experience that the first evidences of his mechanical industry should be recovered amid traces of a rigorous climate. But the more favoured regions of the earth,—typified in the garden occupied by the first pair,—where nature spontaneously provided for the simple requirements of man, may nevertheless be regarded as the primeval habitat and true birthplace of the human race. There indications of his advent are still to be looked for. But to the occupant of such a genial climate, surrounded by the spontaneous abundance of nature, and impelled by no external influences to devise clothing, or construct dwellings: the arts and laborious industry of later generations were superfluous.

But the reasoning faculty whereby man, in his most untutored stage of being, devises the tools and garments, the fire and architecture, by means of which he adapts himself to every climate, is also capable of spontaneous activity; and in regions involving no necessity for the arts or exhaustive toils of the hunter and fisher,

we may conceive of the first application of his virgin faculties to very different occupations from those which modern standards of civilisation suggest.

Difficult as it is to define by specific characteristics, what nevertheless seems so obvious as the essential diversity between man and the brutes: a prominent place among his persistent attributes as the one rational animal, may be assigned to: 1*st*, Reason, working by experience, and therefore tentative and progressive. 2*d*, The moral sense, which recognises responsibility to a law distinct from self-interest. 3*d*, Language, by means of which organic sounds are made subservient to intelligent volition; and developed into a vocabulary coextensive with human thought and perception.

The last of those, in so far as it is man's own work, and not a miraculous endowment, appears to be one of the occupations in which his virgin faculties must have found their earliest employment. And modern as the oldest of living, or even of existing languages may be, the further the study of language is pursued, the more obvious does it become that relics of its primitive forms and phonetic types lie embedded in the structure of later languages. There must the root-germs of language be sought, like the relics of primeval art, buried in later formations of post-pliocene strata.

The origin of language has already found its solution in hypotheses ranging through the widest extremes; and the theories of one class of reasoners have so frequently supplied the theme of ridicule for others, that now, when the science of language is acquiring new favour, it is all the more difficult to deal freely with the questions which lie at its foundation. Nevertheless, looking on this question from the same novel point of view as is here proposed for the whole subject of primitive ethnology, it presents some aspects of suggestive significance. That the New World revealed to its first explorers, in the fifteenth century, no dumb anthropoid link between man and brute; but nations as amply endowed with speech, and some of them even as far advanced in the maturity of an ideographic language, as many of those of the Old World: is in itself no unimportant fact. But it is with man in the condition furthest removed from that of lettered races that we chiefly seek to deal; and of this the Indian of the New World is a highly characteristic type. Numerous tribes occupied its forests and prairies, in a condition as nearly akin to the fauna on which they preyed as seems compatible with the ineradicable instincts of humanity. Such unquestionably had been their condition for

many generations. Yet these savage tribes, devoid of letters, and of every trace of past or present civilisation, were found not only communicating their thoughts by means of intelligent speech; but possessing languages of consistent grammatical structure, involving agglutinate processes of a complexity unknown before, and capable of being employed not only in effective native oratory, but as vehicles of the sacred and profane literature of the Ancient World.

Language has been more frequently regarded as an attribute of man, than as in any respect his own work; and its existence in mature development among nations otherwise at so infantile a stage, might seem to lend countenance to the idea. But no modern advocate for the instinctive or miraculous origin of language, assigns more than certain radical elements of the vocabulary to such a source; and philological analysis yields so much that is an aftergrowth, that the source of the residual elements is not beyond the pale of legitimate discussion. Was language a divine gift to the first man, in the form of an instinctive association in the human mind of sounds with ideas, so that the relation between the phonetic sign and the corresponding thought was one of universal recognition? Or was man simply endued with reason and the organs of speech, and left to develop language for himself by the establishment of a recognised relation between specific ideas and articulate sounds? It does not necessarily follow on the latter assumption, that there was no innate perception of relations between certain specific ideas or objects and articulate sounds; and if some roots can be shown to have such an origin, the fact that others now appear to be arbitrary, is no sufficient argument for affirming their miraculous origin. The first illustration of the use of human speech is furnished in the simple, yet suggestive narrative which immediately follows the genesis of man: "And out of the ground the Lord God formed every beast of the field, and every fowl of the air, and brought them unto Adam, to see what he would call them: and whatsoever Adam called every living creature, that was the name thereof. And Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field; but for Adam there was not found an help meet for him." He was, therefore, alone, without need of speech for the interchange of thoughts, and devoid as yet of a companion with whom he could hold intelligent converse.

The sacred narrative fully accords with experience as to the indigenous or purely native portions of language. Among these

will certainly be found names for the most familiar fauna and flora pertaining to the habitat of the race. Abstract or generic terms, like the class of ideas they express, are of late growth in every language; and even in our own are frequently borrowed from foreign tongues. The names of individual animals are needed before any want of the generic word, *animal*, is felt. Even the abstract idea of number is realized with difficulty by the uncultured mind, apart from specific objects enumerated; nor does the mind necessarily perceive any common relation between forms, colours, odours, or other qualities of objects, noted only for their diversity; so that even the Anglo-Saxon, after providing an ample native vocabulary for the reds, blues, blacks, browns, and whites, familiar to the eye by their differences, borrows the Latin *color*, to express their common relation; as it takes from the same foreign source that of *crime* as the generic term for the crimes with which its own vocabulary is replete. The paucity of abstract terms, common to all languages in a primitive stage, is as characteristic of the American Indian vocabularies, as of the immature and unprogressive Indian mind. But it is an interesting feature in some of the American languages, that abstract terms are frequently traceable as roots employed in the formation of compound words, though they have no recognised independent significance. Such is the Algonquin *aubo*, liquid, in *showiminaubo*, wine; *ishkodaiwaubo*, whisky; *ozhebiegunaubo*, ink, etc.; and the *wahbik*, stone, in the *waubwahbik*, white-stone, or tin; *ozahwahbik*, yellow-stone, or copper, etc. The specific word for water is *nebee;* impure water, *nebeesh;* and the term used by itself for rock or stone is *ahsin.*

In this view of the natural order of development of different classes of words, the first recorded use of speech, in the naming of the living creatures, is full of significance, and strikingly contrasts with the Miltonic dialogues between Raphael and Adam: as in the example where the archangel describes the Satanic artillery, by the help of similes derived from modern architecture:

> "Which to our eyes discovered, new and strange,
> A triple-mounted row of pillars, laid
> On wheels; for like to pillars most they seemed."

The poet's fancy of the invention of cannon, gunpowder, balls, and bombshells, by rebel hosts of angelic combatants, ere our terrestrial planet was evoked from chaos, is not more extravagant than the idea that the speech of primeval man embraced in its vocabu-

lary such words as *wheels, pillars,* and the like terms of mechanical, artistic, or scientific discovery and invention of later times.

In the slow migrations of the human family from its central hives, language imperceptibly adapted itself to the novel acquirements of man. But with the discovery of America a new era began in the history of migration and all its attendant phenomena. Suddenly, in the maturity of Europe's fifteenth century, another world burst upon it, and the nations hastened to possess themselves of the land. But in its novel scenes language was at fault. Beast, bird, and fish; flower and tree; art, nature, and man himself, were all strange; and it seemed as if language had its work to do anew, as when first framed amid the life of Eden. The same has been the experience of every new band of invading colonists; and it can scarcely fail to strike the European naturalist on his first arrival in the New World, that its English settlers, after occupying the continent for upwards of three centuries, instead of originating root-words wherewith to designate plants and animals, as new to them as the nameless living creatures were to Adam in Paradise: apply in an irregular and unscientific manner, the old names of British and European fauna and flora. Thus the name of the English partridge (*Perdicidæ*) is applied to one American tetranoid, *Tetrao umbellus;* the pheasant (*Phasianidæ*) to another, *Tetrao cupido;* and that of our familiar British warbler, the robin, to the *Turdus migratorius,* a totally different American thrush. Where in a few instances anything like a distinct popular nomenclature has been attempted, it illustrates another and necessarily later stage in the process of word-making, as in the designation of the cat-bird, the mocking-bird, the blue-bird, or the snow-bird. In a third class, the adoption of native Indian names shows the very same means at work there, which has been expanding the English vocabulary for the last thousand years, till the exotic terms greatly outnumber the whole native Anglo-Saxon element.

This belongs, in part, to the condition of vitality manifested by languages at a late stage of development, when the power of originating primary radicals has long been dormant. But it also leads to other inquiries, in reference to names of animals, to which I shall recur at a later stage. This much may be noted meanwhile, that looking to names of the most familiar animals and plants, as they occur in languages of the Aryan, or the Semitic stock, each nation appears to have native etymons for such only as were themselves native to the original habitat of the race; and thus there are,

to a certain extent, philological centres of creation, coincident with the supposed zoological ones. If man was primarily endowed not only with the faculty of giving articulate expression to thought, but with phonetic root-words which he instinctively applied to express certain ideas or attributes: he is still occasionally found in conditions in which such inherent instincts could scarcely fail to reassert their power. When cut off by privation of any of the senses; or otherwise excluded, whether by organic defect or external circumstances, from sharing in the fruits of artificial training and transmitted experience: man's inherent faculties invariably reassert their power and repair in some degree the loss. So far, therefore, as language is the product of an instinct of the mind, there are cases in which some of its primitive conditions may be expected to reappear.

The illustrations of the faculties inherent in human nature which any well-authenticated case of man living solitary as a wild animal is calculated to supply, are so obvious, that they have been repeatedly sought for. Linnæus when first directing his attention to ethnological classification, gave a prominent place to wild men, such as those occasionally found haunting the forests of Germany long after the desolating ravages of the French wars. Children orphaned and abandoned, had there occasionally survived to maturity, avoiding like any other wild animal, all subjection to human influence; and though the stories told of such "wild men" have been grossly exaggerated, some well-established facts concerning them are significant and valuable.

A curious illustration of the natural process of name-making, furnished from such a source, has a direct bearing on the present inquiry. A youth who had roamed as a wild denizen of the German forests, subsisting chiefly on eggs and birds, which he procured by his agility in climbing trees, was caught and received into the asylum established by Count von der Recke, at Overdyke. He devoured whatever food he obtained for himself raw; and retained his preference for it in that condition, in spite of every effort to reclaim him from the savage tastes thus contracted during his wild life. He had lived in the forest till he had acquired an intimate familiarity with the habits of the birds which furnished to him the chief means of subsistence; and he had given "to every bird a distinctive and often very appropriate name of his own, which they appeared to recognise as he whistled after them."[1] Here the name recognised by the bird was obviously imitated from its own notes by

[1] Vide *Anthropol. Review*, vol. i. p. 22.

the same process which is called into operation under very different circumstances by the colonist when first acquiring knowledge of the fauna of a new region.

In every abrupt transition from one country to another and diverse one, the emigrant is placed, in relation to the nomenclature of its strange fauna and flora, in a position analogous to that in which we recognise the first origin of speech. But both the language which he uses, and the intellectual faculties employing it, are in a totally different condition from those in which the linguistic instincts of man first gave form and utterance to language. As languages in a late stage give birth to few root-words, so nations do not as a rule, create original names for foreign animals or plants; and no voyager or colonist is found to have invented them even for such strange objects as the ornithorhynchus of New Holland, or the orycteropus of the Cape. They either apply to them such modifications of some old term as suffice to express certain fancied analogies; or more rarely they borrow the unfamiliar foreign name, as alone applicable to the unfamiliar object. Hence the strange quadruped to which Blumenbach gave the name of *Ornithorhynchus*, is the *mallangong* and the *tambreet* of the natives of New South Wales, while it is the duck-billed platypus of Dr. Shaw, and the water-mole of the English colonists. So also the *Orycteropus Capensis* is the *goup* of the Hottentot, and the *innagu* of the Caffre, while it is the *aard-vark* or earth-pig, of the Dutch boer and the English settler of the Cape of Good Hope.

But one class of exceptions to this law of language in its later stage of growth, finds illustration in the names of animals clearly traceable to imitation. In this nearest approximation to verbal creation, the colonist of the New World carries us back to the very foundation of language, and helps to solve one of the profoundest problems in philology. The simplest of such names are mere mimetic voice-descriptions; but they recall that natural significance of sound which seems to lie at the foundation of all primary intelligent speech. Articulate sounds have, within a certain range, an inevitable association with certain specific ideas. In the complicated structure of modern languages, this natural significance of sounds has been so overlaid with the artificial growth of later times, that it can only be detected in fragments. Yet all languages have not only their onomatopœic terms, but a pervading adaptation of sound to sense and association. The mimetic element is present in many words describing sensible objects, operations, and cries.

Clash, whet, cut, grunt, buzz, snore, cough, squeak, laugh, scream, bawl, blare, groan, dash, crunch, bleat, gulp, whirl, crash, cry, roar, whimper, murmur, mutter, gurgle, cackle, chatter, dribble, babble, etc., all have a significance, which in the infancy of language must have been traceable over a larger portion of the vocabulary, and forcibly illustrates the distinction between the vocal utterances of the lower animals, and the intelligent speech of man. The onomatopœic theory will neither account for the origin of language, nor supply a complete series of roots for any portion of the vocabulary. But its influence as one natural source of root-words has been unjustly ignored, or undervalued as the mere source of a few detached and sterile terms. Even now it pervades the most refined and artificial languages, like our own highly complex and composite English; so that the nice discrimination of the true orator manifests itself in part in the choice of words harmonious to his thoughts, and the law of the poet is universally recognised :—

> "'Tis not enough no harshness gives offence,
> The sound must seem an echo to the sense."[1]

By the simplest adaptation of this imitative association of ideas, the European settlers in the New World have added to the stock of root-words. Thus the sloths of South America (*Bradypus communis*, and *Bradypus collaris*) have received from the Spaniard the name of *ai*, in imitation of the plaintive cry they emit when in motion in the forests. So also the Brazilian eagle (*Polyborus vulgaris*) is called the *caracara*, from its hoarse, peculiar utterance; and the boruardi, or large toucan (*Ramphastos toco*), is the *piapoco* wherever its voice has rendered that sound familiar. The whip-poor-will (*Camprimulgus vociferus*) is heard in the Canadian and American forests, uttering throughout a whole summer's night the name by which it is designated. The pewee (*Musicapa rapax*), the towhee (*Emberiza erytyroptera*), the kittawake (*Larus tridactylus*), and many other animals of the New World, have received local or generally accepted names, all illustrative of words originating in the same simple source of imitation as the Egyptian *hoff*, a serpent; *chaoo*, a cat; or the Sanscrit *kâka*, a crow; *kiki*, a jay; *bombhaza*, a bee; *kukkuta*, a cock.

Such examples not only illustrate a class of contributions to the vocabulary, consequent on migration, which the New World supplies; but also point to one, at least, of the primitive sources of

[1] Pope's *Essay on Criticism*, l. 365.

language. Descriptive names, such as the turnstone, kingfisher, fly-catcher; or the white bear, red-poll, indigo bird, scarlet tanagee, or golden eagle; or, again, the hairy woodpecker, passenger pigeon, trumpeter swan, or tell-tale tattler,—with corresponding examples in any ancient or modern language, as in the Sanscrit, where they abound,—manifestly imply the previous existence of names of colours and metals, and the development of descriptive epithets of various kinds. In no sense can such names be regarded as primitives; but such was not the characteristic of the earliest animal names, as may perhaps be illustrated by the familiar word *lion*, common to nearly all the languages of Europe. It appears to be an onomatopœic primitive, whether we seek its earliest root-form in the Greek λέων, or elsewhere. The lion was a native of Macedonia within historic times, and therefore needed no borrowed name in a Pelasgic or Hellenic tongue. The word, though of independent origin, has the same natural derivation as our English *low*, A.-S. *hleowan*, the cry or bellowing (A.-S. *bellan*) of a cow, as in the Sanscrit *go*, an ox; and also our *halloo*, as well as the verb to hollo, A.-S. *ahlowan:* all imitations of natural sounds. Nor is our gain slight in such a process of analysis, when we thus trace a word to a simple natural origin. It is the only finality that is entirely satisfactory in etymology; contrasting in this respect with many a derivation hunted through English, Anglo-Saxon, and all intermediate stages, to a supposed Sanscrit root, still as arbitrary to us as the latest form with its associated significance. Such pure root-words are primitive points of crystallization in language; for the capacity of a living language to multiply offshoots of the simplest roots is incalculable. Take, as an example, the hawk, A.-S. *hafoc:* its name has a common origin with *havoc*, a cry of encouragement to capture and slaughter; it is related to our primitive auxiliary verb *have*, A.-S. *habban*, to have, to hold; to haft or handle, that by which a thing is held; and hence, in A.-S. *hæft*, one held, *i.e.*, a captive, a slave. As still used in the south of Scotland, a *haft* is a dwelling; *to haft*, to settle in a dwelling, as in another sense we still use a *holding*, a *hold*, a *stronghold*. Hence also, a *haven*, A.-S. *hæfen*, from which we return to our original root-word, in its Anglo-Saxon equivalent of *hæfen-blæt*, literally, a haven-bleater, which was applied both to the sea-gull and the hawk. But the offshoots of this simple root-word have not yet been exhausted. The relation of *hebban*, to heave, elevate, or hold up, to the more primitive *habban*, to have, to hold, is not difficult to

discern. From thence, by regular gradations of change, we trace our way to *heafig*, heavy, difficult to hold up; and so, tropically, *heaflic*, heavy, sorrowful; *heavignes*, sorrow; while in another direction the same *hebban*, to elevate, gives origin to *hefen*, the eaves or elevated part of a house, and, finally, to *heben*, *heofen*, *i.e.*, heaven, the highest; just as in Scotland the Danish *lofter* has been converted into the lift, *i.e.*, the sky, the visible heavens.

Returning from this illustrative digression which the primitive λέων has suggested: with slightly varying forms, the same word belongs to the oldest and most modern of the European languages, and has supplied to our own such tropical offshoots as *leonine*, *lionize*, and *lions* of that modern breed for which Carlyle suggests that, "in such *lion-soirées*, might not each lion be ticketed, as wine-decanters are?" But the lion was also native to the area of the Semitic languages, and has its separate names, as though it had become known to them apart from those Eastern localities in which the Indo-European parent race and language had their origin. The Hebrew *aryeh*, *ari*, Syriac *aryo*, are descriptive, according to their derivation from the Hebrew verb, *arah*, to tear, to rend; and a similar derivation has been sought for *leo*, λέων, *lion*, in the root *lû*, to tear, to destroy; but it seems a needless process of inversion, where the sound is not without its suggestive mimicry. Of the source of the Coptic *mouee*, however, there can be no doubt. The same designation has had its independent origin in the English nursery, from the lowing of a cow; and is indeed nearly the repetition of the mimetic λέων, with the labial instead of the dental. Traces of a similar independent origin of many words of the Coptic vocabulary are full of interest; for some of them are recovered from the most ancient graven records on the monuments of Egypt. When Thoth, who was the god of letters, first appeared on the earth, there was a tradition, according to Plutarch, that the inhabitants of Egypt had no language, but only uttered the cries of animals, until he taught them speech, as well as writing. The cry of the Egyptian ibis still repeats its ancient name of *hippep*. By some curious association of ideas, it furnished to the Egyptian the symbol of speech. Thoth, the god of letters, had the ibis for his sacred animal, and is represented as the ibis-headed deity; and from its name come the Coptic *hap*, judgment, *hōp*, to conceal, in reference to wisdom, secret or hidden knowledge. The illustrations of names derived from the cries of animals, which the language of ancient Egypt supplies, are numerous and striking.

Take as examples: *mouee*, a lion; *e'he*, a cow; *htor*, a horse; *eoo*, an ass; *baampe*, a goat or ram; *uhor*, a dog; *chaoo*, a cat; *rurr* and *eshau*, a pig; *phin*, a mouse; *croor*, a frog; *petcpep*, a hoopoo; *meni*, a swallow; *hippep*, an ibis; *djadj*, a sparrow; *hoff*, a serpent. Other words expressive of actions or qualities had their origin in the Egyptian language by the same natural process of imitation, as: *owodjwedj*, to masticate; *thophtheph*, to spit; *omk*, to swallow; *kradjkradj*, to grind the teeth; *rodjredj*, to rub; *teltel*, to let water drip; *sensen*, to sound, etc.

Such illustrations are of peculiar interest, derived as they are from the language of the Egyptian monuments, and the most primitive of all written tongues. They might be multiplied from many sources; and in the comparison of languages, the independent origin of words of closely corresponding sound and approximating significance, serves to illustrate how all language may have had its being. The Latin *tonitru* and *taurus* are both imitations of grave prolonged sounds, though the latter is derived and has its counterpart, whether independently or not, in various languages,—Greek, ταῦρος; Syriac, *tauro;* Chaldee, *tora;* Arabic, *taur*. The primitive Sanscrit *ma*, for mother, reappears in the Mama Oello, or Eve of the Peruvians, among whom *mama* signified mother, *mamaconos* matron; as among the Greeks we find the corresponding μάμμα and the πάππα φίλε of Nausikaa, in the *Odyssey;* and among the Romans the *mater*, and also the *mamma* for the mother's breast. The Persian and Hindoo *ma* also bear the latter significance; and, with the terms derived from the Latin root, strikingly illustrate the growth of language from the simplest of infantile articulations. The first simple word of the English nursery is thus seen independently employed in centuries and regions equally remote. Among the Tlatskani, an Athabaskan tribe, *mama* signifies father, and *naa* mother; but in other languages the former retains the feminine signification. The Navajo, *mah* or *sho-mah;* the Weitspek, *mamus;* the Arapahoe, *nanah;* the Sioux, *enah;* Tuscarora, *ena;* Kenay, *anna;* Adahi, *amanie;* Guinau, *amma;* and the Esquimaux, *amama*, are all suggestive of the same primitive origin as the English *mamma;* for they are not mere dialectic changes of one root-word. The Guinaus are of South America, the Navajo Indians belong to New Mexico, the Sioux to the remote North-west, and the Esquimaux to the Arctic circle, while totally diverse vocabularies intervene. The relations which the mind still perceives between certain sounds and sen-

sations, were doubtless more numerous in the earliest condition of language; and are most readily perceived where man lives chiefly in direct connexion with external nature.

In illustrations derived from the nomenclature adopted by European colonists of the New World, we have seen the re-adaptation of the vocabularies of one continent to the natural objects peculiar to another and essentially different one. This process is reversed when we turn to the native Indian languages. In them the animals introduced from Europe have almost invariably received a descriptive name. The horse is called, in the Cherokee, *sawquili*, the pack-carrier, from *u-sawqui-la*, he carries a pack. In the Delaware it is *nanayanges*, the animal that carries on its back; in the Chippewa, *paibaizhikogunzhi*, the animal with one hoof, or nail, on each foot; and in the Dakota it is rendered by a compound of *'sungka*, a dog, the only native beast of burden. Hence it becomes *'sungkawakang*, the spirit-dog, or marvellous beast of burden. So also the Chippewa Indian, accustomed to clothe himself in the buffalo's skin, or other spoils of the chase; and totally ignorant of the art of weaving, or any analogous process: terms European cloth *muhnedoowagin*, i.e., *muhnèdoo* or *manitou*, a supernatural being, and *wagin*, the covering of an animal. The implied meaning is: the marvellous, or supernatural clothing. In all such terms the contrast is obvious to such simple forms as the Sanscrit *açvah*; the Egyptian, *htor*; the ἵππος, *equus*, *horse*; the Sanscrit *kâka*, and the κορώνη, *cornix*, *crow*; etc. Two very diverse processes are thus applied in naming new objects, or novel phenomena, according to the mode in which they are first presented to the mind; and even to different impressions produced by the same texture or sound, on the eye and ear. We thus perceive how, by such processes, many words may be called into existence by the presence of a single new object; nor is it unimportant to note, in connexion with this, how differently the same phonetic influences may impress the ear, and so be rendered into spoken or written language.

The variations in independent onomatopœic words derived from similar sounds are highly significant as illustrations of the growth of language. They arise not only from the diverse impressions received by the ear among different nations, but from the processes of selection and expression which the forms of each language suggest. Thus, to take one of the simplest articulate renderings of such imitative signs: the sound of the drum—Sanscrit, *dundubhi*,

Greek, τυμπανον,—which we write *rubadub*, the Frenchman renders *rattaplan*, the German, *trumberum*, the Hungarian, *czimbalom*, the Manchu, *tung-tung*, and the Chinese, *kan-kan*. The ancient Egyptian designated the ass, *coo*, we render the same sound *he-haw*. So also the βρεκεκεκὲξ κοὰξ κοὰξ of the frogs of Aristophanes is not the less an articulate imitation of their cry, because to the Egyptian ear it sounded *croor*, to the English it is *croak*, to the Algonquin Indian *an-koo*, and to the South Australian *kong-kan*. The Romans, with nicer discrimination, distinguished between the *coaxo* of the frog, and the *crocito* of the raven; to the Algonquin Indian the latter becomes *gah-gau-ge*, and to the Mohawk *kaw-kor-yeh*. In part no doubt the above mimetic words include representations of diversified sounds; but they also illustrate the process of selection, guided by defined forms of each language, by means of which very different roots have their origin in a common source. Oronhyateka, an educated Mohawk Indian, in replying to some queries addressed to him relative to his native language, thus writes to me in reference to the *Caprimulgus vociferus* or whippoorwill: "When I listen with my Indian ears it seems to me utterly impossible to form any other word from an imitation of its notes than *kwa-kor-yeuh;* but when I put on my English ears I hear the bird quite distinctly saying *whip-poor-will.*" Assikinack, an educated Odawah Indian, writes the same cry—heard nightly throughout the summer in the American forests,—*wha-oo-nah;* and an Englishman, recently arrived in Canada, who listened to this cry for the first time, without being aware of the popular significance attached to it, wrote it down at my request *ch-poo-weh*. This illustrates the origin of dissimilar words—like the ancient Egyptian *eshau*, and the modern Algonquin *koo-koosh*, for the sow,—from sounds of the same animal. We have various words for the diverse utterances of the dog; discriminate in our vocabulary between the neigh and the whinnying of the horse; and otherwise recognise the different cries of each animal, as well as the diverse impressions produced by the same sound on different ears, dependent on their previous cultivation. From those, new words are eliminated by a process of natural selection; and each one of them is capable of becoming, in its turn, the root of its grammatical group. The aborigines of South Australia have introduced into their own language the words *yang*, a saw; *yarr*, to saw. Adding to these the affixes already existing in the language, they accordingly use as the verb, *yarr-bulliko*, to saw; *yarr-bullikan*, a sawyer; *yarr-bullingel*, a sawpit; *yarr-batoara*, that which

is sawn, a plank. So also they have *yang-kobulliko*, to sharpen a saw; *yang-kobullikane*, that which sharpens the saw, a file, etc. The onomatopœic process is manifest in other examples, both of native words, and those which have been introduced into the Australian dialects subsequent to intercourse with Europeans. The native name of the emu, for example, *kong-ko-rong*, is simply an imitation of its cry.

But the source thus far referred to will account only for a small portion of any vocabulary. With the growth of language, terms derived their significance from form, colour, and other attributes; while passion and feeling had their instinctive interjectional utterances always at hand. The native American languages abound in descriptive names; as is the case with many of those of Asia, and indeed with none more so than the Sanscrit, which is rich in synonyms for animals descriptive of their appearance, habits, cries, etc., and in poetical and figurative terms applicable to them. The mode of supplying the requisite names for foreign animals in the native American languages has already been illustrated in that of the horse. It differs in no respect from the process pursued by the most cultured nations for supplying the same want, as in the case of the ἵππος ποτάμιος, or the *cameleopardalis* of the ancients; or the seahorse, guinea-pig, or prairie-dog, of our own language. Thus the Algonquin *mishibizhe*, a lion, is compounded of *mishi*, great, and *bizhiw*, lynx or wild-cat; *paibikwahwegung*, a camel, is *paibikwahk*, that which has mounds or swellings on it. This again changes to *paikwahwegung*, a dromedary, by omitting the repetition of the second syllable, *bi*, which indicates the plural. *Kokoosh*, a sow,—a purely onomatopœic word,—becomes *pahgwahdgekokoosh*, the wild boar. *Pizhike*, equivalent to the generic *bos*, becomes *pimidahbipizhike*, a draught ox, by being compounded with *pimidahbi*, he or it that draws. In the Athabaskan and other western dialects, a specific word exists for *slave;* but ideas accordant with the practice prevalent among eastern tribes of either putting to death the captives taken in war, or adopting them into the tribe, are curiously illustrated by the Algonquin term, *ahwahkaune-wenene*, i.e., *ahwahkaune*, a working animal, and *wenene*, man. In some dialects the specific term *zahgon* is applied to the monkey; but on my asking its name from Assikinack, he designated it *nindomahkomashin*, which means literally the lice-hunter. In the Chippewa dialect it is *oondumahkoomashe*, i.e., *nundom* to search, and *ahkoomashe* the root for doing

anything relating to lice. So also on asking the name of the tiger, my Indian informant promptly replied *katahgizid-mishibizhe, i.e.*, the streaked or spotted, big wild-cat; but he admitted on further questioning that he only designated it so in accordance with the usage of the language. On putting the question to the Rev. Dr. O'Meara, he gave the same word, *mishibizhe*, for the tiger and lion.

In names of this class, we see the Indian pursuing the universal process pertaining to the growth of language in its later stages, when it has the ample materials of a matured vocabulary to resort to. But primitives originating directly from the observation of natural sounds, are not uncommon among native root-words of the New World. The following specimens of Indian onomatopœia have been noted down chiefly from the lips of Indians speaking the closely allied Chippewa, Odahwah, and Mississaga dialects of the Algonquin tongue :—

Shi-sheeb, the duck.

Eeen-en-win, the duck. This cry is heard during spring from great flocks of ducks which then frequent the lakes.

Ah-ah-wa, a diver, a kind of duck.

Chee-chish-koo-wa, the plover.

Koo-koo-koo-oo, the owl ; Mohawk : *O-ho-ho-wah.*

Kah-kah-be-sha, the screech-owl.

Oo-oo-me-see, the screech-owl.

Mai-mai, the red-crested woodpecker, which repeats this sound about ten times in quick succession.

Pau-pau-say, the common spotted woodpecker ; so called from the sound it makes in striking a tree with its bill.

Gah-kau-bân, a small owl, which repeats the cry *gah-kâu* in the woods at night.

Tchin-dees, the blue jay.

Aund-a-gosh-kwân, the crow ; Mohawk : *Jo-kaw-weh.*

Gah-gau-ge-shîn, the raven.

Gah-yaush-ko-shân, the gull.

Kuh-yaushk, the gull.

Bashk, a night-hawk.

Moosh-kah-oos, a kind of crane which frequents marshy places, and makes this sound, with a choking cry, in the evening.

No-no-no-cau-see, the humming-bird.

Shi-shi-gwa, the rattlesnake.

Pe-zhew or *bizhiw*, the lynx, or wild-cat.

Koo-koosh, the sow ; Mowhak : *Kwes-kwes.*

Pah-kah-ah-kwân, the cock or hen.

Au-koo-ge-san, the frog.

Muk-kuk-ku, the frog.

Dend-dai, the bull-frog.

Pau-pau-ki-nay, the grasshopper.

In all those names the terminal *n* has the French pronunciation, as in *matin*. The corresponding evidence of the origin of expressions for inanimate things by a similar process of imitation, is still more interesting, as illustrative of the independent growth and expansion of languages. Thus *pwah*, to smoke tobacco, only occurs in compound words, as *pwah-gun*, a tobacco-pipe; *muh-na-pwah*, I am out of tobacco. The noise of waves, on the water, or dashing themselves against the rocks, is called *mah-dwa-yaush-kah*, *i.e.*, the lake roars. The imitative sound, *yaush*, is sufficiently apparent. It is made to form a part of the name of the gull, the cry of which is generally accompanied by the sound of the waves; and is modified to express other noises, as *paush-ke*, it bursts with heat. The rustling of the wind through the trees is expressed in the Chippewa by *muh-twa-bah-gah-sin*; but as it travels through the forest, it produces different sounds, according to the character of the trees. In the pine forest it is a melancholy, prolonged gush, and is thus expressed in the Odawah dialect: *mah-dwa-yaund-ah-gah-shi*. This is applied to the wind when sweeping through all trees the foliage of which is perpetually green, as the hemlock, cedar, and pine; but when it sways the forest branches of the maple, beech, and oak, it is *mah-dwa-bi-mah-gah-shi*. So also the Indian says, *gaus-kwa*, it makes a rustling noise; *tchuh-tchu-mo*, he sneezes; *gweesh-gwa-shi*, he whistles. He makes a noise with the hand on the mouth, is *sah-sah-qua*; it hails, *sah-sah-gun*; he coughs, *oo-soo-soo-dum*. To laugh is *bah-pĕh*, to cry, *muh-wĕh*; and many sounds pertaining to the arts and usages of the European intruders have given rise, in like manner, to the requisite additions to the Indian vocabulary: as *ut-to-tah-gun*, a bell; *paush-skezi-gun*, a gun; etc., by the very same process as gave to the ancient Sanscrit its *kinkinî*, and to the Chinese its *tsiang-tsiang*.

But there is another class of words which, no less clearly than those formed by direct imitation, suggest an instinctive perception of relations between certain sounds and sensations or ideas. In this are included the interjectional expressions of joy, grief, fear, surprise, contempt, etc. The polished Sanscrit and Greek have their interjectional words as well as the Algonquin or Iroquois dialects. But the important point—to which I have directed special attention in watching the cries of the Indians in their games and dances,—is the extent to which certain recognised values are uniformly attached to the majority of the long and short vowel sounds. It is true that interjectional utterance ends where speech begins.

Inarticulate cries, expressive of wonder, joy, surprise, fear, doubt, interrogation, and the like aspects of sudden emotion, are unpremeditated and instinctive; and bear in a great degree a common character among all nations. But they are not therefore the barren equivalents of the inarticulate cries of the lower animals. From the latter we derive many words expressive of the ideas of neighing, whinnying, lowing, barking, snarling, purring, etc.; but the former are, in a far higher sense, a ground-work of intelligent speech. They are traceable in many reduplications, and influence the choice of vowel-sounds in a large class of words. They are seen, moreover, to constitute a universal language, in circumstances where man is thrown back on such raw materials of speech as his only resource. An intelligent British officer, in illustrating to me the attempts at colloquial intercourse between the French and English troops during the Crimean war, described them as consisting largely of such interjectional utterances reiterated with expressive emphasis and considerable gesticulation. Dr. Lieber, referring to the reduplication of monosyllables in the language of the nursery, adds: "I observed the same when the different armies entered France; and the soldiers of different nations came in frequent contact, so that a jargon was produced, intelligible, as far as it went, to all." The common ground which constitutes the starting-point in such efforts at an interchange of ideas by vocal signs, is the recognised and universal significance of certain emotional and seemingly instinctive utterances, aided by that other universal language of pantomimic gestures, or ocular signs of thought.

But this universality of the recognition of such emotional utterances is not strictly instinctive; for they are, in part at least, as purely organic as the cries of the lower animals. The influence of mirth, sudden pain, surprise, anger, or disgust, in the mysterious relations of the mind and body, operates in each case differently on the muscles of the mouth and face, and so affects the vocal and articulating organs of speech. By this means, definite classes of ideas are associated with certain sounds; and thereby another and more comprehensive set of phonetic signs acquires significance.

The elementary signs of alphabetic writing have each a specific value, and a natural fitness for expressing certain ideas. This is discernible in many root-words; although, in the artificial processes of later derivation and hybridity, this association between sound and sense has been neglected. The organs of speech, and their affection by various sensations and emotions, determine, as we see,

by association, the significance of certain sounds, and especially affect the vowels. But the consonants have also their rough or smooth, nasal, sibilant, slow, or abrupt and explosive characteristics, which in innumerable cases can be seen to have determined their selection as the fittest orthoepical representatives of objects and ideas. These properties of articulate sounds enter into the primary meaning of many utterances which have acquired a later tropical application. One class of delicate mutations by which the significance of a sound is abruptly modified by a vowel-change, appears to depend partly on this, and partly on the natural associations of ideas with slow or rapid, rough, or smooth, combinations of such phonetic atoms: as in *μακρός*, *μικρός*; gleam, gloom; crack, creak, croak, etc. etc.

The sources of primary articulate sounds thus indicated are sufficient to supply many elements of language adequate to a vocabulary expressive not only of visible and tangible objects, but of emotions and abstract ideas; and with those, and the intelligent mind and reasoning faculties already present in man: all supernatural aid for the origination of language appears to be superfluous. It is moreover the only true finality in language yet reached. "How can sound express thought? How did roots become the signs of general ideas?" asks one distinguished student of the science of Language; and the answer is: "The roots are phonetic types produced by a power inherent in human nature. They exist, as Plato would say, by nature; though with Plato we should add that, when we say by nature we mean by the hand of God."[1] In this as in all other appeals to miracle, the question is taken out of court. I do not question the Divine power to endow man with a perfect language; but I see no necessity for assuming a superhuman origin for it; whilst such evidence as is indicated above suggests that in language,—as in agriculture, metallurgy, letters, science, and all later steps of human progress;—the grand distinction between rational and irrational life prevailed from the first; and man, endowed with reason, accomplished all else by its means.

When the Sanscrit *kârava*, a raven, is traced to the root *ru*, a verb applied to various sounds, as the bark of the dog, the lowing of the cow, and even the murmuring sound of running water, it seems an arbitrary finality for which the appeal to Plato's *Nature* supplies an unsatisfactory basis. But there lies beyond this a natural and associative significance in the rough, liquid *r*, as in Sanscr. *rorud*,

[1] Max Müller's *Science of Language*, p. 369.

to cry greatly; Eng. *roar:* as a reason for its adaptation to ideas which no other phonetic would represent so expressively. If the lips are parted in the act of expelling the breath through the mouth, the sound *ma* is produced, the simplest interjectional utterance of the nursery; and this origin, as we have seen, receives confirmation from its association with the idea of mother or nurse in many languages; as well as from the remoter relations to the same primitive of *ma, mamma, mammalia,* etc. If again the lips are brought more abruptly in contact, and suddenly parted while breathing, *pa,* another of the natural nursery roots of language is produced. The former, as the more simple and involuntary sound, most frequently retains the maternal associations; but this natural origin is confirmed by the variations in different languages. In these we find the *pappa, baba, tata, dada, nana,* etc., interchangeably used for father, mother, or other near relative; and also for nurse, midwife, etc.; and corresponding with these are the *poppa, tetta, pap,* and *teat,* for the mother's breast. But such derivations from natural roots are scornfully rejected by the modern etymologist, who traces back his Sanscrit *matri* to its root *ma,* to measure, to regulate; *mâmi,* I measure; whence comes *mâs,* the moon, *mâsa,* a month, and *manu,* the thinker, man. *Pitri,* father, is derived in like manner from Sanscr. *pâ,* to protect; *bhrâtri,* brother, from Sanscr. *bhri,* to support; *duhitri,* daughter, from *duh,* to milk, etc. Such a process seems wholly to reverse the natural order of descent, and to seek the root among the branches. It assumes that the term expressive of the idea of *father,* instead of originating in the nursery, followed slowly in the wake of the recognition of paternal protection and other patriarchal attributes; that that of *mother* was only devised long after the child had grown up, forgetful of maternal nursing, and learned to esteem her as the regulator of domestic affairs: like the Saxon lady, *hlæfdige,* or bread distributor. So also, the brother only received his name in the old age, or on the death of the father; and the daughter had to tarry for a designation till the maturity of pastoral life had found for her the characteristic avocation of dairymaid.

The natural and self-originating elements of language thus indicated, not only illustrate the significance of that earliest reference to human speech, when everything that had life received from man its name; but they also show that the origination of root-words may, and does still go on, in modern, as in the most primitive tongues. But the organic influences here insisted upon,

as helping to determine the primary value of certain phonetic signs, and the meaning of a large class of root-words, have suggested a very different line of reasoning to the most philosophical among the naturalists of the New World. "As for languages," says Agassiz, "their common structure, and even the analogy in the sounds of different languages, far from indicating a derivation one from another, seem to us rather the necessary result of that similarity in the organs of speech which causes them naturally to produce the same sound. Who would now deny that it is as natural for men to speak as it is for a dog to bark, for an ass to bray, for a lion to roar, for a wolf to howl, when we see that no nations are so barbarous, so deprived of all human character, as to be unable to express in language their desires, their fears, their hopes? And if a unity of language, any analogy in sound and structure between the languages of the white races, indicate a closer connexion between the different nations of that race, would not the difference which has been observed in the structure of the languages of the wild races—would not the power the American Indians have naturally to utter gutturals which the white can hardly imitate,—afford additional evidence that these races did not originate from a common stock, but are only closely allied as men, endowed equally with the same intellectual powers, the same organs of speech, the same sympathies, only developed in slightly different ways in the different races, precisely as we observe the fact between closely allied species of the same genus among birds?"[1] Here the writer faces boldly the extremest conclusions to which such premises lead. *Race* is employed as the equivalent of *species*, and philological affinities in languages are viewed as no more than the similarity of intonation in the notes of closely allied species of birds or beasts. They did not acquire such corresponding utterances by learning each other's notes; and so the writer proceeds: "Why should it be different with men? Why should not the different races of men have originally spoken distinct languages as they do at present, differing in the same proportions as their organs of speech are variously modified? And why should not these modifications in their turn be indicative of primitive differences among them?"

But here the relation between language and the organs of speech is forced into an assumed identity, sustained only by superficial analogies. Man possesses indeed a faculty of vocal

[1] *Boston Christian Examiner*, Art. *Types of Mankind*, p. 282.

utterance, dependent on his organic structure, which is the true equivalent of the voice of the lower animals; but he has, over and above this, the power of evolution of intelligent language by which to communicate his thoughts to other men. This is his grand distinction among animated beings. But the miraculous element is reason, not language. Endowed with that, and possessing the organs of speech, all else lies within the compass of his own work. The grounds for this opinion have already been indicated in part. Language as the offspring of an extrinsic or divinely created vocabulary of phonetic roots, arbitrarily, or instinctively associated with abstract ideas in the human mind, is a gratuitous assumption. The association of ideas with their first vocal signs depended on causes which are natural, not supernatural; though this in no degree detracts from the value of language as a grand characteristic of the divine image in man.

It is in subserviency to innate faculties of the mind that an intimate relation is recognised in primitive roots of language between sound and sense, extending even to the separate phonetic elements of words; so that the choice of these appears to have a certain fitness, only now preserved in the mutilated fragments of primitive speech surviving in existing languages. But it also follows from this theory of the origin of language that many root-words have been independently added at later stages, and in younger languages under process of development. The innate and primary significance of articulate sounds, however, maintains its influence throughout; and in innumerable cases corresponding sounds have been chosen to express independent, yet related ideas, in different languages. But it is a grave error to confound this unity of sound with the analogies of grammatical structure by which affinities of languages have been traced; and it is no less a mistake to assume that the contrast between the harsh gutturals of the Red Indian, and the soft vocal modulations of the cultured European, presents any true analogy to the organic differences which produce, on the one hand, the rough harsh cry of the eagle, and on the other the melodious trilling of the thrush. And here the mediæval antiquary comes to our aid. No Indian savage ever exceeded in ferocity the old Norse Regner Lodbrok, or Sidroc the Dane. By such leaders England and the Scottish Lowlands, from the Humber to the Forth, were chiefly settled under the Dane-lah conceded by Alfred to Guthrun; and by the same fierce sons of Odin was that land recolonized where, under the Normans

of a later generation, the *Langue d'oil* acquired its greatest polish and regularity. The rough gutturals of the Norseman still give character to the Northumbrian and Scottish dialects, where no such mellowing element subdued them as that which wooed the continental Norman to the harmonious language of the Trouvères. The change was doubtless in part an organic one, such as unfits the White for imitating the harsh gutturals of the Red Indian. We see this illustrated in the familiar alteration of voice which a slight inflammation of the bronchial glands produces; in the permanent change of the male voice at puberty; and also in its arrestment by emasculation. But if the supposed analogies between the notes of the wild bird of prey and the language of the wild Indian were true, the organic change should be accompanied not by the mere roughening of vocal modulations, but by the development of Indian speech. In England, where the Danish settlers long retained their native language, *Thorsby, Askerby, Coningsby,* and many another colonist's name, coupled with his Danish "*bye,*" or abiding-place, still attest their former presence. In France, the corresponding *Tourville, Tancerville, Hagueville,* etc., show how speedily the rough Thor, Tancred, and Haco, accepted the Romano-French of their adopted country. What followed shows how change of language can affect the use of the organs of speech; and once more illustrates how indispensable it is to keep the intellectual element ever before us as an essential part in the natural history, as well as in the civil history of man. "The phenomenon of the organs of speech yielding to social or moral influences, and losing the power of repeating certain sounds, was prominently observable amongst the Normans. No modern French Gazette writer could disfigure English names more whimsically than the Doomsday Commissioners of William the Conqueror. To the last, the Normans never could learn to say, '*Lincoln;*' they never could get nearer than '*Nincol*' or '*Nicole.*'"[1]

Nevertheless the phenomena presented to the naturalist by the American variety of man, as well as by the allied species of animals suggesting comparisons with others of the same genus in Europe and Asia, have taken strong hold on the mind of the gifted American student of science above referred to: in whose processes of induction, philological affinities and the grammatical structure of languages are of small account. As one curious collateral illustration of a phase in the organic elements of lan-

[1] Palgrave, *History of Normandy and England,* vol. i. p. 703.

guage, the arguments of Agassiz claim special notice here, as speculations of the most distinguished among the scientific naturalists of the New World. In his latest contribution on this subject he observes: "Much importance is attached to the affinity of languages, by those who insist on the primitive unity of man, as exhibiting in their opinion, the necessity of a great affiliation between all men. But the very same thing might be shown of any natural family of animals: even of such families as contain a large number of distinct genera and species. Let any one follow upon a map exhibiting the geographical distribution of the bears, the cats, the hollow-horned ruminants, the gallinaceous birds, the ducks, or of any other families, and he may trace as satisfactorily as any philological evidence can prove it for the human language, and upon a much larger scale, that the brumming of the bears of Kamschatka is akin to that of the bears of Thibet, of the East Indies, of the Sunda Islands, of Nepal, of Syria, of Europe, of Siberia, of the United States, of the Rocky Mountains, and of the Andes; though all these bears are considered as distinct species, and have not any more inherited their voice one from the other, than the different races of man."[1] The same argument is applied throughout the different species referred to, down to the gay and harmonious notes of the thrushes, uttered by all "in a distinct and independent dialect, neither derived nor inherited one from the other, even though all sing *thrushish*."

So far as this ingenious analogy affects the question of innate or inherited voice, it amounts to no more than this, that bears are bears, and men, men. No philologist imagines the human voice to be inherited in any other sense than every part of man's organic structure is inherited. But neither does any philologist doubt that the language which his organs of speech enable him to express is inherited, that is, derived from others by imitation and memory, in a way that no inferior animal's utterances are acquired. The affinities thus noted by the observant naturalist relative to such closely allied systems of intonations running through each whole family are full of interest: though not from any analogies they present to the affinity of languages. They rather seem to illustrate the striking contrast between the gift of speech and the origin of language. Each living being was created with its special organs of voice and utterance, and has perpetuated these with all the other specialities of its peculiar organization. The

[1] *Indigenous Races of the Earth*, p. xv.

mew of the cat embraces, along with a labial consonant, the whole range of vocalic sounds, *mi-a-e-o-u*, but so also does the familiar noise of a door swinging slowly on its hinges. The vocal sounds of the human voice can be executed with an organ stop, for they are produced mainly by the breath being expelled through the throat and mouth, lengthened or shortened by the lips according to the required note. So also the same organs of sound, when employed in whistling, can be made, like the artificial pipe, to imitate all the varied notes of singing-birds. But the finch transferred to the neighbourhood of the lark, or the cuckoo reared in the nest of the linnet, does not lose its own notes for those of its companions: as the English child reared in France or Italy, or stolen by the wild Indian of the American forests, acquires the speech of its nurse, and unless trained in its utterances, loses its own mother tongue.

The bray of the ass, though an act of volition, is no intellectual effort, such as the most foolish of human speech is. If the ass will utter its voice it cannot choose but bray; and no training, but only a complete change of its organs of sound, could enable it to low like the ox, or mew like the cat. There are indeed well-known exceptions, for we can teach the parrot, the starling, and one or two other birds, to imitate certain words, and even sentences: that is, to utter a few consecutive sounds of the human voice. In other words, we can so far superadd speech, in its narrowest sense, to the inarticulate utterances of their vocal organs; but we cannot give them language. That pertains alone to him who is not only divinely endued with life, but the inspiration of the Almighty giveth him understanding.

But America furnishes another and very different source of information from any yet referred to, relative to the instinctive operations of the mind, in associating specific sounds with ideas. A great and well-founded interest has been awakened in many thoughtful minds by the efforts of Dr. Howe, of Boston, to communicate language, and the power of interchanging thought, to Laura Bridgeman and Oliver Caswell, two blind deaf-mutes. The former of these, Laura Bridgeman, is not only deprived of sight and hearing, but she is also nearly destitute of taste, and thus, with one exception, her limited sense of touch is the sole means she possesses of communion with the outer world. Nevertheless, under the guidance of her skilful teacher, she has not only acquired the power of verbal thought, and the means of conversing with others,

but has manifested unusual mental vigour and aptitude for intellectual development. When, however, she is spoken of as mute, it has to be borne in remembrance that there is no defect in her vocal organs. Like the majority of deaf-mutes, she does not speak, simply because she is alike destitute of all knowledge of the nature of audible sound, of the effect it can have upon others, and of its utterance by them. The mere deaf-mute sees the motions of the lips and other external indications of speech, of which she is unconscious; so that her mind is debarred from all conception of spoken language, except such as may be innate and instinctive.

Here then is a remarkable example of an active and highly intelligent mind, in a condition more completely excluded from acquiring phonetic signs of thought than any "wild man" shut out from intercourse with his kind, and growing up from infancy as one of the natives of the forest. The first point to be noted in Laura Bridgeman is that, so far from being mute by nature, she was accustomed, before being subjected to training, to indulge freely in the use of her voice, but this being unregulated by the ear, and associated with no specific ideas to the hearers, led only to harsh, and seemingly aimless sounds. Her teachers accordingly, while imparting to her a finger-utterance, arrested her in the effort to form a phonetic language, and taught her to restrain her desire for vocal expression. Yet even now the sense of enjoyment survives; and she will at times, when alone, "indulge herself in a surfeit of sounds."

But while the process of developing a vocal language was arrested in Laura Bridgeman by the very means which brought her into intelligent intercourse with her fellow-beings, there is one important exception. Abstract ideas are now represented solely by her acquired finger-language, or by writing; but the persons she comes in contact with receive from her an audible designation. She has a sound, generally a monosyllable, for every individual in whom she takes an interest. Dr. Lieber, who, some years since, devoted considerable time to the study of her vocal sounds, ascertained that she then used nearly sixty as the signs of individuals.[1] It is thus apparent that while she lacks all means of vocal intercourse, by which alone organic utterances are matured into the recognised symbols of thought, she nevertheless has the

[1] "On the Vocal Sounds of Laura Bridgeman."—*Smithsonian Contributions*, vol. ii.

innate idea of language, and makes sound supply representative signs of impersonations. The names, moreover, are not arbitrarily given; but appear to have some association of specific ideas with certain sounds. Miss Wright, one of her teachers, remarks: "Before learning language Laura used many signs to make known her wants, and for a long time gave to many of her friends names, which in some way were associated in her mind with the variety of their characters. She produces still the same sound for me that she made eight years ago, with this difference, that originally it was very soft and gentle; now it is louder and fuller, to correspond, as she says, with the change in myself." In another case she deliberately altered the associated sound. "One of her teachers," says Dr. Lieber, "told me that Laura once omitted to produce the accustomed sound indicating the person who related the incident, for a whole week; after which she uttered an entirely different name-sound, and said: this is your name;—which name, the teacher retained at the time the account was given to me." Here we perceive a deliberate selection and change of sounds to express certain associated ideas, and probably altered opinions.

Familiarity with the use of the finger-alphabet, and intercourse by its means with others, has led Laura to drop many of the sound-names of individuals; and now she frequently converses at great length with herself, speaking, even in dreams, with one hand, and replying with the other. But the progressive development of a spoken language can be seen in this, that the sound originally employed as the name of one of her teachers appears to be employed now as an equivalent to the words *teacher*, and *to teach*. Dr. Lieber draws attention to the fact that all the personal designations of Laura were monosyllables. During the brief personal intercourse, however, that I have had with her recently, she repeatedly used the dissyllable *do-tah*, by which she now designates Dr. Howe. But her sounds, or names, are still chiefly monosyllabic, or consist of a repetition of the same syllable. They differ, however, greatly from the accustomed sounds of the English language. The lips and throat are used much more than the tongue; and consonantal sounds,—as *b, d, f, fo, pa, pik, pr, ss, t, ta, ts*,—are most frequent. Among separate vowel sounds, *ee* and *oo* are most noticeable. But Laura has no ear to guide the modulations of her voice. They are not perceived by her as sounds, and have not, therefore, been matured into articulate speech; but are in many cases mere gurglings, chucklings, or moanings, as difficult to reduce to writing

as the unfamiliar languages of the Clalam Indians or the Hottentots. Our words are formed with a special view to their effect on the ear, with the rolling *r*, the sibilant *s*, the broad *aw*, the prolonged *ll*, etc., and experience teaches their effect on others. But Laura's selection is probably guided by the very diverse perception of the only sense she is conscious of; so that sounds ineffective to the ear may be very expressive in the effects produced on her own organs of speech.

But apart from the training of the ear, both to regulate the modulations of the voice, and to instruct it by imitation, Laura's great want was the interchange of ideas, prior to receiving from others a ready-made language, which superseded the development of vocal utterances as her representatives of abstract ideas. She gives sudden expression to the sound *Ff*, or *Fi*, when displeased at being touched by strangers; and in like manner she is observed to utter one or two other familiar involuntary interjections, or emotional expressions of pleasure or pain. But it is more important to notice that she uses the interjectional *fie*, not only as a sign of irritation or dislike, but also when playfully repelling advances; thereby indicating the change from an involuntary utterance, to its adoption as the sign of an idea.

In Laura Bridgeman then, we have a being possessed of lively intelligence, delicate mental perceptions, and acute moral and sympathetic feelings; capable of all organic utterances, but excluded by absolutely impassable barriers from any perception of spoken language. She cannot even conceive of sound as a thing heard; yet she aims at expressing ideas by its means, and derives pleasure from her own vocal utterances. If language be primarily a divine gift, or instinctive faculty, in which the organs of speech respond to conceptions of the mind, as other organs act in obedience to mental volition, hers seems to be a case where the assumed phonetic types or roots of language ought to be traceable. The interjectional element of language is clearly recognisable; while that of onomatopœia is precluded. Laura Bridgeman, as we see, possesses not only the rational soul, but mental faculties of a high order. But shut out from the external world, from whence knowledge is transmitted to us through eye and ear; and devoid of all means of communicating with other minds, her whole mental faculties lay inert, like one in a state of syncope. She uttered sounds, unquestionably associated in her mind with ideas; and craved in all ways to open up some avenue of intercourse with

other minds. But all was darkness, silence, isolation, till she attained to an interchange of thought and experience with her fellow-beings. Nevertheless the mind was there; the means of manifesting its activities was alone wanting; and that supplied, the force of William Humboldt's remark forthwith appears:— "There could be no invention of language, unless its type already existed in the human understanding. Man is man only by means of speech, but in order to invent speech, he must be already man."

Vocabularies are complex, inconsistent, and frequently lawless, and as we trace them back, they are found to proceed from very diverse sources; but the further we follow up any language towards a conceivable beginning, the more consistent its grammatical forms prove to be. The irreconcilableness of this with the modern idea of man's origin by development from any inferior, unintelligent order of animated beings, is not unworthy of notice. Such a conception presupposes an animal devoid of speech; and as intellect dawns on it in its first stage of development into the reasoning and reflecting being, its originally limited powers of utterance gradually extend their compass, and language would thus be the slow product of effort, practice, and culture. On such a theory the detached elements of a vocabulary would be the first product; and the scientific relations of the grammatical forms of language would pertain only to its latest stages, and in their most perfected condition, to written languages. But the opposite is the case; justifying the inference that an intelligent mind, capable of comprehending and using the forms and laws of structure involved in the relations of language to the innate perceptions of individuality, time, place, and all other discriminating niceties of what we call grammar, was an endowment of primeval man: fitting him for developing the associative relations of sound into a vocabulary expanding with his growing knowledge and intellectual requirements.

But, in addition to the attempts at the formation of a vocal language which have been noticed in the case of the remarkable blind and deaf-mute Laura Bridgeman, some valuable indications of the instinct of language may be derived even from her mute signs. She exhibits all the impulsive manifestations of feeling: smiling, laughing, blushing, shuddering, and weeping. She gives the imperative stamp of the foot, the affirmative nod, the negative shake of the head, and other familiar signs of mental action, which she has not acquired, and cannot conceive of as perceptible by others.

"When Laura is astonished or amazed," Dr. Lieber remarks, "she rounds and protrudes her lips, opens them, breathes strongly, spreads her arms, and turns her hands with extended fingers upwards, just as we do when wondering at something very uncommon. I have seen her biting her lips with an upward contraction of the facial muscles when roguishly listening, at the account of some ludicrous mishap, precisely as lively persons among us would do . . . . when Laura once spoke to me of her own crying, when a little child, she accompanied her words with a long face, drawing her fingers down the face, indicating the copious flow of tears; and when, on New Year's Day of 1844, she wished in her mind a happy new year to her benefactor, Dr. Howe, then in Europe, she involuntarily turned towards the east, and made with both her outstretched arms a waving and blessing motion, as natural to her as it was to those who first accompanied a benediction with this symphenomenon of the idea, that God's love and protection might descend in the fulness of a stream upon the beloved fellow-being." In its touching pathos, this expressive benediction of the blind and deaf-mute, surpasses that last farewell of "the blameless king" and Guinevere, when

> "She felt the king's breath wander o'er her neck,
> And, in the darkness, o'er her fallen head,
> Perceived the waving of his hands that blest."[1]

The use by Laura of the affirmative nod, and the negative shake of the head, has already been referred to. Even when indicating the *yes* or *no* by means of her fingers, she involuntarily accompanies them with those signs. She also uses the negative shake of the hand by which, as it were, we repel an idea, and the abrupt movement of the head by which aversion is expressed. "The Italians," says Dr. Lieber, "move repeatedly the lifted digit from right to left, as a sign of negation, while the modern Greeks throw back the head, producing at the same time a clucking noise with the tongue. Laura makes these signs even without writing *Yes* or *No* in the hand of the person with whom she converses, having learned, but not having been told, that somehow or other we perceive this sign, or that it produces upon us the desired effect, although she is unable to solve the great riddle of the process by which this is done. Laura, far below our domestic animals, so far as the senses are concerned, but infinitely above them because she is endowed with a human mind, has attained to the abstractions of affirmation and

[1] *Idylls of the King.*

negation at a very early age; while no dog or elephant, however sagacious, has been known to rise to these simple ideas, for which every moment even of animal existence calls, wherever reflection sways over the naked fact." Laura then, while still with knowledge, not as in Milton's case, at one entrance, but at all entrances quite shut out, and without any possibility of conceiving of sound as audible, or in any other way perceptible: felt nevertheless an instinctive impulse to express her emotions and ideas, both by sign and sound. Speech was struggling in her for the responsive union on which the birth of language depends. Her interjectional utterances were wholly independent of imitation; onomatopœic vocal-signs, if conceivable at all in her case, can only occur as suggestions of the one sense of touch, by means of which she perceives the most delicate vibrations, and recognises a friend or stranger by his step. No phonetic types of language can be discerned in her utterances; but the growing association of ideas with specific sounds, shows how thoroughly the rudiments of language as a means of expressing, though not of interchanging thought, appeared with the first response of recognition. Strange, indeed, is it to think how that imprisoned soul in its lonely solitude, may have been giving audible expression to ideas, as full of meaning as the prattling of an intelligent child; and craving in vain the sympathetic return, to which it at length responded with such grateful ardour. Even now, when alone, she may be heard to utter the name-sound of one of her friends; and, on inquiry as to the reason of it, refers to some thought she was then indulging in about the absent one. While I was attempting to speak to her, she manifested a sense of irritation and perplexity, consequent on my unfamiliar and blundering use of the finger-language. In the midst of this, Dr. Howe entered the room, and she immediately brightened up, and with a lively smile uttered the sound for her benefactor. To me it would have been meaningless, but for the obvious association of ideas; but to her friends it was the intelligible utterance of a name, accompanied with an expressive welcome. With such evidences of the innate capacity of the mind to develop vocal sounds as signs of thought, even in the absence of the perception of the relations of sounds to ideas, I am confirmed in opinions previously maintained by me as to the origin of language; however opposed it may be to those most in favour among scholars worthy of all respect.

Such, then, appears to be a reasonable conception of the primeval occupation of man. Preeminent among created beings, with

the full compass of vocal utterance, the type of language present in the human understanding, and the most delicate sense of association between his ideas of the external world, its forms and aspects, and articulate sounds: it was an intellectual instinct for him, replete with delight, thus to associate his ideas, by a fine sense of fitness, with articulate speech. Such, accordingly, is the work in which we find the first man engaged, as the sacred narrative discloses the earliest glimpse of him, entering on his terrestrial domain as the lord of the whole inferior creation; before the solitude of Eden presented to him a companion endowed with corresponding gifts, with whom he could exchange intellectual converse. Such, as it seems to me, is no unmeet occupation for him who there, surrounded by the exhaustless supplies of a luxurious climate, needing no superfluous ornament of dress, no busy loom, nor weapons for war or the chase; no palace wherein to dwell; no temple made with hands wherein to worship:

> "In naked majesty seemed lord of all,
> And worthy seemed."

Looking at the origin of language by the natural processes here suggested, it is obvious that its unity may be too strongly insisted on as an inevitable consequence of unity of race; for the perception of the natural significance of articulate sounds, though blunted, is by no means lost. The exclamatory use of nearly all the vowel sounds has a universally recognised significance. The instinctive and involuntary emotional utterances are in like manner universal; and all ears respond to the cultivated sounds of domesticated animals, and especially to the varying tones of man's dumb companion, the dog. There it is, if at all, that we find any analogy to human language. Its whine, its bay, its whimper, its bark, its yelp, its growl, its snarl, its snap, its howl, are each distinct utterances; some of them are acquired results of domestication and intercourse with man, and every one of their names is a word directly derived from this dog-language. An intelligent dog can be spoken to, and catches many ideas from the sounds of its master's voice; while he, again, can tell by the tone of its bark, when it is greeting an acquaintance, threatening an intruder, repelling a beggar; or whether it is only indulging in that liberty of speech which is the birthright of every civilized dog, and taking an abstract bark at things in general. Yet amid all the marvels of canine or equine instinct and sagacity, no true analogy to language can be recognised in the audible growl

or snarl of two quarrelsome dogs, or the friendly whinny with which a horse greets his mate.

By the processes indicated, portions of national vocabularies must have originated independently, and may receive augmentations at any stage of the growth of a language. Nor is the correspondence of such words in different languages proof of a common derivation. They constitute a distinct species of words, and belong primarily to far older formations than the supplementary additions borrowed from foreign languages to supply the growing necessities which civilisation creates. Derived, however, from such natural sources, each locality and region will thus have certain distinctive features of its own. The very cries of animals, and the modulated rhythms of the wood-songsters, as well as the natural sounds peculiar to mountain, sea-coast, forest, and prairie, give origin to terms which become peculiar native root-words of certain localiti And, given a single new root-word, we have seen to how great an extent the language may be enriched by its offshoots.

The growth of Patois, such as the Pidgeon English of China, and the more singular Oregon Jargon, illustrates the influence of the same process, under the diverse circumstances resulting from abrupt intercourse of races widely dissimilar in speech. Languages as remote in grammatical structure as in euphonic expression there supply the elements out of which a new tongue has to be framed; and the process shows some equally curious results, in the modification of sounds and the readaptation of old terms and grammatical forms to the ear and voice of a miscellaneous population baffled by its own confusion of tongues. But this interesting department of the subject will be most conveniently discussed in connexion with the whole question of the intrusive races of the New World, in a later chapter.

The theory of the origin of language, illustrated here from various sources, while it is at variance with that idea of unity, which would trace the whole multiform vocabularies of the world to one common source: by no means conflicts with the scientific recognition of the grammatical affinities of languages, whereby the closest relations may be traceable in their construction, with only a small percentage of words in common. Such is the relationship subsisting between the Anglo-Saxon and Sanscrit, though the latter was a dead language before the former acquired its insular life; or again, the contrasting correspondence traceable between certain of the languages of India, with a grammatical structure purely Tamul,

and vocabularies chiefly Sanscritic. The philologist traces the genealogy of words, unlike in meaning, and dissimilar in every letter, back to a common root. Whatever affects the use of the organs of speech, be it climate, acquired habits, or imitation of novel articulations, inevitably leads to some change in the vocabulary; so that mutually intelligible dialects of one language become in a few generations independent tongues. Among the American Indian languages this is peculiarly noticeable; and is commented upon by the French Jesuit Fathers, as occurring within their own knowledge among Canadian tribes. But with the mastery of the science of language, this seemingly arbitrary instability is found to be regulated by phonetic laws acting in consistent harmony with the organs of speech; so that the explorer traces his way back, step by step, through accumulated series of verbal formations, ›plete with disclosures in relation to man, not less definite, and far more marvellous than all that geology has revealed. But it is the origin of speech, not the science of language, that is under consideration; though the idea of the natural evolution of phonetic roots in the first interchange of vocal signs among beings already endowed with reason, in no degree conflicts with the fascinating disclosures of the scientific philologist in reference to the ramifications of language from such phonetic germs. Amid all the seemingly lawless changes of a language adapting itself to the commonest wants of the uncultured savage: the grammatical structure survives, as in that of the Lenni-Lenapé or Delaware Indians, with its rich, regular, and systematic forms closely following the analogy of the ideas they are intended to express; and adapting themselves to the most delicate modulations of thought. Here is an element, to which the sweetest harmonies of wood-note rhythms present no analogy. By mutations as truly regulated by grammatical laws as the language in which Plato wrote and Pindar sung, the wild, unlettered Indian modifies each root, or complex word-sentence, so as to express number, time, relation, quality, or passion, as if guided by an intellectual instinct. And as speech is thus found to be the universal attribute of man; so also the first glimpse of the New World revealed him in possession of another acquisition which constitutes the germ of sciences indispensable to his progress in arts and civilisation.

CHAPTER V.

FIRE.

THE FIRE-USING ANIMAL—THE AURIGNAC SEPULCHRE—POST-PLIOCENE FUNERAL FIRES—THE AUSTRALIAN FIRE-MYTH—FIRST USES OF FIRE—THE AZTECS' SACRED FIRE—PERUVIAN SUN-WORSHIPPERS—SACRIFICE OF THE WHITE DOG—SACRED FIRES OF THE MOUND-BUILDERS—CHINOOK FIRE-MAKING—TIERRA DEL FUEGO—FIRE THE GRAND ALCHYMIST—THE FIRST FLASH OF INTELLECT.

No incident attending the discovery of the New World is more suggestive than the evidence which first satisfied Columbus that his exploration of the mysterious western ocean had not been in vain. The sun had once more descended beneath the waves as he took his station on the poop, and his eye ranged along the horizon, when suddenly a light glimmered in the distance, once and again reappeared to the eyes of Pedro Gutierrez and others whom he summoned to confirm his vision, and then darkness and doubt resumed their reign. But to Columbus all was clear. Not only did these flitting gleams of light reveal to him certain signs of the long-wished-for land; they told him no less clearly that the land was inhabited.

There is something singularly significant in the old Greek myth which represents the Titanic son of Iapetus stealing the fire of Zeus that he might confer on the human race a power over the crude elements of nature. Man is peculiarly fire-using. The element which becomes in his hands a power that controls all the others, and subjects them to his use, is an object of dread to the lower animals, alike amid arctic snows and the shadows of a night-camp in the tropics. Its use, moreover, is so universal as to admit of its being regarded as one of the primitive instincts of man; and so peculiarly his own that he may be appropriately designated the *fire-using animal.* Nevertheless it is not an indispensable assumption that man was from the first familiar with the art of producing fire. On the contrary, his supposed ignorance of it, during primitive

ages, has been employed as an argument in confirmation of the idea that the first habitat of man must have been a climate where his unclothed body experienced no discomfort in the changing seasons, and where fruit was found in sufficient abundance to supply all his wants without any need of artificial preparation.[1] When, however, we turn to the sacred narrative for the first glimpses of primeval man, we find Abel laying the firstlings of his flock on the altar of sacrifice; as once more, when an undeluged world became the theatre of human life, burnt-offerings smoked on the altar, and the sweet savour of a typical sacrifice rose up with the ascending flames, while the covenant of earth's harmonious cycles and seasons was guaranteed.

The geological chronicle, amid the startling disclosures it has recently revealed in proof of the antiquity of man, accompanies this in one remarkable case, at least, with evidence of his familiarity, even in the post-pliocene dawn, with the use of fire. In the immediate vicinity of Aurignac, a French town in the department of the Haute Garonne, near a spur of the Pyrenees, a grotto or cavern, concealed by the accumulated talus of limestone fragments and earthy matter washed down from the slope of the Fajoles hill, was accidentally brought to light in 1852. The entrance to the cavern was closed by a large stone slab; and within were found human bones forming parts of no less than seventeen skeletons of both sexes; including children and adults. Unfortunately the cavern was not brought under the notice of its scientific explorer, M. Lartet, till some of its most important contents had been removed and lost. But the results of his careful survey, confirmed by subsequent observations of Sir Charles Lyell and other competent authorities, appear to establish that in this Aurignac cavern we have a sepulchral vault of the post-pliocene period. Within its arched cavity lay the remains of man, seemingly regularly interred; and, mingling with them, a number of perforated discs of shell (*cardium*), the remains seemingly of a bracelet or necklace. In the underlying layer of soil, with the bones of the *Rhinoceros tichorhinus, Ursus spelæus,* and other extinct animals, were the tusk of a young cave-bear carved and perforated for suspension as an ornament, and a flint-knife which had evidently never been used. Outside the slab of rock with which this ancient catacomb was closed, numerous worn flint-implements, tools made of the horns of the rein-deer and roe-deer, sling-

[1] Flourens, *De la Longévité Humaine*, p. 127.

stones and other works of art, lay embedded in a thick layer of ashes and charcoal, and fragments of fissile sandstone reddened by heat. Bones of the extinct carnivora and herbivora mingled in the same deposit; the latter being the more numerous. Those of a young *Rhinoceros tichorhinus* bore unmistakable traces of its having been cooked and eaten by man. Remains of the mammoth, great Irish deer, aurochs, fossil horse, and other animals abounded. The bones not only of the herbivora, but of a cave-bear, had been subjected to the action of fire, and split open for the extraction of the marrow. A stone implement, recognised by Danish antiquaries as a hammer used in making flint-knives, and a siliceous core from which these had been struck, proved that the arts of the primitive tool-makers had been practised on the spot, where, as is legitimately assumed by M. Lartet and others, the strange fauna of that post-pliocene age had been consumed at successive funeral feasts.

It is unnecessary to attempt to measure by any definite number of centuries the probable age of this Aurignac cavern. It is the oldest example of regular sepulture hitherto discovered; and points, even more indisputably than the works of art of the drift, to the contemporaneous existence in Europe of man and the extinct mammalia. Whatever remotest antiquity the juxta-position of works of art and human remains with those of the *Ursus spelæus* and *Rhinoceros tichorhinus* can establish, is here abundantly indicated. Yet what do those seemingly oldest traces of European man disclose? Not indices assuredly of any simian transition; but proofs of intellect and acquirements in no degree inferior to those of uncultured nations of the present day. Here, in the second elephantine period of the geologist, and contemporary with the great carnivora of the caves, are evidences of regular human sepulture, works of art deposited in the tomb, and the ashes of funeral fires accumulated at its portal. The significance of the artificially closed catacomb, the sepulchred dead, the gifts within, and the ashes and debris of the last funeral feast without, cannot be misinterpreted. The buried implements of war and the chase, the long quenched fires, the sacred rites, all tell the ever recurring story of reverent piety, unavailing sorrow, and of the instinctive faith in a future life which dwells in the breast of the rudest savage, and separates him by an impassable gulf from the inferior orders of creation.

Here then as we look on the man of that post-pliocene Europe, so unlike our own: a savage hunter, devoid of metallurgy, and

dependent on his rude skill for such tools, as horn, bone, and flint supply; we see the contrast between him and the lower animals to be scarcely less striking, than when we compare the wondrous operations of animal instinct, with the most matured achievements of human intelligence. It is the interval between instinct and reason. We cannot perhaps measure it from clearly defined points where we are able to say: Here the domain of the one ends and the other assumes its place; but the distinctions are nevertheless unmistakable between the unerring but unprogressive rectitude of instinctive skill, and the erring, blundering, and wayward, but tentative and finally progressive efforts of reason and experience. In his savage state, indeed, "from nature rising slow to art," man appears at each succeeding step but as the pupil and poor copier of instinctive skill, with blunted perceptions and a scantily developed imitative faculty. Yet when we have exhausted all our admiration of the inimitable arts of the bee, the ant, the spider, and silk-worm; or even of that which we recognise as intelligence in the dog, the fox, the horse, or the elephant: there are still manifest in such traces as the works of art and the extinguished fires of Aurignac, indications of the ancient domain of reason; and we are as fully prepared as ever to concur in the decision of Columbus that the night-torch of the Guanahanè savage was indisputable evidence that the unknown world which dawn was about to reveal was the habitation of man.

Some of the lowest forms of humanity, alike intellectually and physically, have been traced among the aborigines of Australia; yet there human intelligence had achieved the discovery which lies at the very foundations of all possible civilisation. According to the inconsequential account furnished by a native Australian of the first acquisition of fire:—"A long, long time ago a little bandicoot[1] was the sole owner of a fire-brand, which he cherished with the greatest jealousy. So selfish was he in the use of his prize, that he obstinately refused to share it with the other animals. So they held a general council, where it was decided that the fire must be obtained from the bandicoot either by force or strategy. The hawk and pigeon were deputed to carry out this resolution; and after vainly trying to induce the fire-owner to share its blessings with his neighbours, the pigeon, seizing, as he thought, an unguarded moment, made a dash to obtain the prize. The bandicoot saw that affairs had come to a crisis, and, in desperation, threw the fire

[1] A small, sharp-nosed animal, not unlike the Guinea-pig.

towards the river, there to quench it for ever. But, fortunately for the black man, the sharp-eyed hawk was hovering near, and seeing the fire falling into the water, with a stroke of his wing he knocked the brand far over the stream into the long dry grass of the opposite bank, which immediately ignited, and the flames spread over the face of the country. The black man then felt the fire, and said it was good."[1]

The discovery of the art of fire-making prefigured in this rude myth, is intimately associated in the minds of the Australian aborigines with their distinctive ideas of man. According to the mythology of the Booroung tribe, inhabiting the Mallee country, on Lake Tyrill, they were preceded on the earth by a race of Nurrumbunguttias, or old spirits, who had the knowledge of fire; but these were translated to heaven before the black man came into existence. One of them, named *War*, or the Crow,—the Australian Prometheus,—is now the star Canopus; and he it was who first brought fire back to earth, and gave it to the black men.[2]

It thus appears that the art of producing fire was one of the earliest achievements of man's untutored intellect; and as this is effected in diverse ways, it may supply a clue whereby to trace affinities among tribes widely separated, in so far as the process pursued is independent of any special local peculiarities. The docile service of fire is one of the first means by which man achieves his triumphs over nature. With its aid his range is no longer limited to latitudes where the spontaneous fruits of the earth abound at every season. Its use lies at the root of all the industrial arts. The friendly savages found by Columbus on the first-discovered island of the New World were armed with wooden lances, hardened at the end by its means. The most civilized among the nations conquered by Cortes and Pizaro, had learned by the same means to smelt the ores of the Andes, and make of the metallic alloys the tools with which to quarry and hew their rocks, to sculpture the statues of the gods of Anahuac, and the palaces and temples of the Peruvian children of the sun. Without fire the imperfect implements of the stone period would be altogether inadequate to man's necessities. By its help he fells the lofty trees, against which his unaided stone hatchet would be powerless. It plays a no less important part in preparing the log-canoe of the savage, than in propelling the wonderful steamship, by means of which the great lakes and rivers

[1] *Canadian Journal*, vol. i. p. 509.
[2] *Trans. Philosoph. Institute, Victoria*, vol. i.

of the New World have become the highways of migrating nations. Yet fire is not indispensable to man. The natives of the Ladrones, discovered by Magellan in 1521, could not have been entirely ignorant of it, for their islands are mostly of a volcanic character, and, like the Tierra del Fuego of the same discoverer, their volcanoes have been in activity in modern times; yet the islanders, according to some of the early Spanish voyagers, thought fire, which they had never seen before, a devil or god that bit fiercely when it was touched, and lived on wood, which they saw it devour.

The fire-worship of the Ghebirs is but a degraded form of that homage to visible divinity with which man worships the glorious god of day, and bows down before the heavenly host. Among the civilized nations of the New World, accordingly, a peculiar sanctity was associated with the familiar service of fire. At the close of the great cycle of the Aztecs, when the calendar was corrected to true solar time at the end of the fifty-second year, a high religious festival was held, on the eve of which they broke in pieces their household gods, destroyed their furniture, and extinguished every fire. In the reconstruction of the ritual calendar, the intercalated days were held as though non-existent, and dedicated to no gods; on which account they were reputed unfortunate. At the end of that dreary interval of fasting and penitence, during which no hearth smoked, and no warm food could be eaten throughout the land, the ceremony of the new fire was celebrated. After sunset the priests of the great temple went forth to a neighbouring mountain, and there, at midnight, the sacred flame was rekindled, which was to light up the national fires for another cycle. The process by which it was procured, by revolving one piece of dry wood in the hollow of another, is repeatedly illustrated in the Mexican paintings of Lord Kingsborough's work. But, true to the bloody rites of the national faith, at this sacred festival the fire was kindled on the breast of a human victim, from whence the reeking heart was immediately afterwards torn out, and cast as a bloody offering to the gods. The period from the extinction to the rekindling of the sacred flame was one of great suspense. With a superstitious feeling, in striking accordance with the customs and ideas of the northern Indians, the women remained confined to their houses, with their faces covered, under the belief that if they witnessed the ceremony they would be forthwith transformed into beasts. Meanwhile, the men gathered on the terraced roofs, and looked forth in dread suspense into the darkness. The flames on the summits of

the great teocallis, which lighted up the city at all other seasons, had been extinguished; and if the priests failed to rekindle them, it was believed that the night must be eternal, and the world would come to an end. But dimly, through the darkness, a spark was seen to glimmer on the distant summit of the mountain, and from thence it was swiftly borne to the temple, towards which the worshippers turned with renewed hope. As the sacred flame again blazed on the high altar, and was distributed to the other teocallis, shouts of triumph ascended with it to the sky. Feasts, joyous processions, and oblations at the temples followed, and were prolonged through a festival of thirteen days, devoted to a national jubilee for the recovered flame, the type of a regenerated world.[1] The long interval which transpired between this closing rite of the great cycle was of itself sufficient to give it an impressive sanctity in the eyes of the Aztec worshipper. He who witnessed it in youth saw it only once again as life drew towards a close; whilst few indeed of all who rejoiced at the renewed gift of fire could expect to look again on the strangely significant rite. Compared with the annual miracle of the Greek Church in the crypt of the holy sepulchre, to which it bears some resemblance, the great festival of the Aztecs was replete with significance and solemn grandeur, though stained with the blood of their hideous sacrifices.

The Peruvian sun-worshippers preserved the harmony between their recurrent festivals and the true solar time, by a ruder process of adjustment than that which was devised by the remarkable proficiency of the Aztec priests in astronomical science. Nevertheless, they too had their secular festival of Raymi, held annually at the period of the summer solstice. For three days previous a general fast prevailed, the fire on the great altar of the sun went out, and in all the dwellings of the land no hearth was kindled. As the dawn of the fourth day approached, the Inca, surrounded by his nobles, who came from all parts of the country to join in the solemn celebration, assembled in the great square of the capital to greet the rising sun. The temple of the national deity presented its eastern portal to the earliest rays, emblazoned with his golden image, thickly set with precious stones; and as the first beams of the morning were reflected back from this magnificent emblem of the god of day, songs of triumph mingled with the jubilant shout of his worshippers. Then, after various rites of adoration, preparations were made for rekindling the sacred fire. But this, with the Peruvians, was done

[1] *Clavigero*, vol. ii. p. 84.

by a process far in advance of that retained by the Aztec priests. The rays of the sun, collected into a focus by a concave mirror of polished metal, were made to inflame a heap of dried cotton; and a llama was sacrificed as a burnt-offering to the sun. Only in the case of the sky being overcast did the priests resort to friction for rekindling the altar; but the hiding of his countenance by the god of day was regarded as little less ominous than the extinction of the sacred fire, which it became the duty of the virgins of the sun to guard throughout the year. A slaughter of the llama flocks of the sun furnished a universal banquet; and, while the god was propitiated by offerings of fruit and flowers, there appear to have been some rare occasions on which the sacrifice of a human victim—a beautiful maiden or a child,—gave to this graceful anniversary a nearer resemblance to the appalling rites of Aztec worship.

Among the northern Indian tribes some faint traces of the annual festival of fire are discernible. At the sacrifice of the white dog, the New Year's festival of the Iroquois, the proceedings extended over six days; and such were the obligations which its rites imposed on all, that if any member of a family died during the period, the body was laid aside, and the relatives participated in the games as well as the religious ceremonies. The strangling of the white dog destined for sacrifice was the chief feature of the first day's proceedings. On the second day the two keepers of the faith visited each house, and performed the significant ceremony of stirring the ashes on the hearth, accompanied with a thanksgiving to the Great Spirit. On the morning of the fifth day the fire was solemnly kindled by friction, and the white dog borne in procession on a bark litter, until the officiating leaders halted, facing the rising sun, when it was laid on the flaming wood and consumed, during an address, which included a special thanksgiving to the sun, for having looked on the earth with a beneficent eye.[1]

There is, perhaps, no connexion traceable between the various rites thus described; for it would be easy to find their parallels among ancient and modern nations. They pertained to the religious practices of the Chaldeans, to the rites of Baal, and to the earliest and simplest forms of idolatry. Sabaism is indeed the most natural, and at the same time the most elevated form of false worship, commending itself by many visible tokens, as of a divine influence and power, to uninstructed man; and the association of fire with the sun as its source is scarcely less natural. "Take ye

[1] *League of the Iroquois*, pp. 207-221.

good heed unto yourselves," exclaims the lawgiver of Israel to the tribes in the wilderness, "for ye saw no manner of similitude on the day that the Lord spake unto you in Horeb out of the midst of the fire; lest thou lift up thine eyes unto heaven, and when thou seest the sun, and the moon, and the stars, even all the host of heaven, shouldest be driven to worship them." This worship of the sun, though associated with ancient rites of Asiatic nations, is not therefore necessarily an evidence of the eastern origin either of the faith or the nations of the New World. But, in the services to which it gave rise there, we have, at least, suggestive hints of the links that bind together its own ancient and modern tribes: Perhaps also they may supply a clue to the interpretation of some of the obscure sculptures, with their mysterious hieroglyphics, still remaining on sites of the extinct native civilisation of America; and of rites once practised amid the sacred enclosures, and on the altar-mounds which give such peculiar interest to the river-terraces of the Mississippi valley.

Among the remarkable structures of the Mound-Builders, reviewed in a subsequent chapter, their explorers have been struck by the peculiarities of a certain class of mounds, erected on the most elevated summits of outlying hills. Concerning these "there can be no doubt that the ancient people selected prominent and elevated positions upon which to build large fires, which were kept burning for long periods, or renewed at frequent intervals. They appear to have been built generally upon heaps of stones, which are broken up and sometimes partially vitrified. In all cases they exhibit marks of intense and protracted heat."[1] Such indications have been supposed to mark ancient signal-stations adapted to the telegraphic system still in use among native tribes, of sending up columns of smoke as a warning that enemies are at hand. But this "putting out fire," as it is called among the Indians of the north-west, for the purposes of signal, is now accomplished by the simple process of setting the short-tufted buffalo grass in flame; and presents slight analogy to the traces of intense fires on the ancient hill-mounds, where the amount of scoriaceous material often covers a large space several feet deep.

The disclosures of the mounds in the Ohio and Scioto valleys show that fire was extensively used in the religious as well as the sepulchral rites of the Mound-Builders. Their strange buried altars have glowed repeatedly with the sacred fires, and consumed

[1] *Ancient Monuments of the Mississippi Valley*, p. 183.

the offerings of their most costly treasures, ere they were finally covered up, to lie concealed during the long night of intervening centuries. Accompanied as they are by traces suggestive of human sacrifices, they present analogies to the cruel worship of the Phœnician and Carthaginian Baal, whose temples and altars were chiefly built on the tops of hills, or on the summits of artificial piles. The worship of the sun by the Phœnicians and Syrians is directly stated by Herodian, and confirmed by the occurrence of the name of Baal with that of the sun on Carthaginian coins and Palmyrene inscriptions, as *Baal-chamman, Baal-shemesh, Baal-shamayim.* But there is no need to assume the presence of Phœnician voyagers and colonists in the New World, to account for the origin of rites and practices which rather point to that essential unity, throughout the whole family of nations, traceable in the independent origin of the same practices, and the instinctive development of like arts and customs wherever man is found subject to corresponding influences.

Perhaps greater importance is due to the employment of the same method of fire-making at the present day among the Indians of the north-west, as we see illustrated in ancient Aztec paintings; while the sun-worshippers of the southern continent had devised a totally distinct method, corresponding to that by which the Romans kindled the sacred fire. Mr. Paul Kane thus describes the former process as employed by the Chinooks on the Columbia River. "The fire is obtained by means of a flat piece of dry cedar, in which a small hollow is cut, with a channel for the ignited charcoal to run over; on this the Indian sits to hold it steady, while he rapidly twirls a round stick of the same wood between the palms of his hands, with the point pressed into the hollow. In a very short time sparks begin to fall through the channel upon finely frayed cedar-bark placed underneath, which they soon ignite. There is a great deal of knack in doing this, but those who are used to it will light a fire in a very short time. The men usually carry these sticks about with them, as after they have been once used they produce the fire more quickly."[1] With slight variations in the application of the principle, this process of friction appears to be the recognised Indian and Esquimaux mode of procuring fire; and there is no question that among all the Indian tribes not only was a certain superstitious sanctity attached to fire, but they look with distrust on the novel methods employed by Europeans for its

[1] *Wanderings of an Artist among the Indians of North America*, p. 188.

production. When, in 1811, Elksatowa, the prophet of the Wabash, and the brother of Tecumseh, the Shawnee warrior, was exhorting his tribe to resist the deadly encroachments of the white man, he concluded one of his eloquent warnings by exclaiming: "Throw away your fire-steels, and awaken the sleeping flame as your fathers did before you; fling away your wrought coverings and put on skins won for yourselves as was their wont, if you would escape the anger of the Great Spirit." Nor is there wanting among many Indians a conviction that the Ishkodaiwaubo, or fire-liquid, is a malignant form of the same mysterious element, an evil medicine wrought for their destruction by the white Manitou. But the fire-steel, which the Shawnee orator associated with foreign novelties distasteful to the Great Spirit, is in use among the Fuegians in their so-called Land of Fire. At Tierra del Fuego, Captain Weddell states, he produced the tinder-box in presence of a party of Fuegians, in order to ascertain how fire is obtained by them, and presently discovered that his steel had been purloined. This however he recovered, and after sending the culprit to his canoe with threats of punishment, he learned that they procure fire by rubbing iron pyrites and a flinty stone together, catching the sparks in a dry substance resembling moss, which is quickly ignited.[1]

Thus we trace throughout the western hemisphere various methods for calling into existence the wondrous element, so peculiarly distinctive of man. Even in these simple processes common relations of a very comprehensive character are apparent; while the Peruvian, with the solar mirror, stands apart alike from the rude Indian and the cultivated native of the Mexican plateau; and far to the south of both, the Fuegian finds in the natural products of his inhospitable clime, a means of fire-making analogous to that which the Shawnee prophet taught his people to regard as one of the unhallowed practices of the white man. But all alike exhibit man, even in the rudest stage of undeveloped intellect, master of the same secret; and turning to many useful, and even indispensable purposes what no other animal can be taught to use; or scarcely even to look upon without dread.

The Indian of the New World had learned for himself the invention which lies at the root of all arts, and is the true Tubal-Cain, Hephæstos, Vulcan, and Wayland Smith; the Quetzalcoatl, divine instructor of the Aztecs in the use of metals; and the Manco

[1] Weddell's *Voyage towards the South Pole in* 1822-24, p. 167.

Capac, child of the sun, with his golden wedge, the germ of all Peruvian civilisation. He had made slave of the grand alchymist and artificer, *Fire;* though as yet he knew not all the worth that was in him. With his aid the sturdy oak, the birth of centuries, was made to bow to the behest of the simple Aborigines. The massive trunk shaped itself into a canoe, hollowed out by the magical touch of this artificer. The clay, kneaded into the simple gourd-like caldron or jar, became the parent of ceramic art; or burnt into the builder's brick gave birth to all triumphs of architecture. The Peruvian *Anta* dissolved like the streams born of the snows on the copper-bearing Andes, and took shape of use or beauty at the will of the ingenious modeller. The white tin, pliant and of little account, assumed a new power in the hands of the metallurgist, and, added to the copper, produced the beautiful and useful alloy which marks important transitional eras of the Old World as well as the New: the symbol of that age of bronze which mingles in the dreams of Hesiod's Theogony, and illumines the dawn of prehistoric centuries of Scandinavia and Britain.

But the magic power of this new artificer was seen only as yet in infantile sports. The iron ore lay a dark, unsightly, and inert mass; and alongside of it, in contemporaneous strata, the fire-heat of centuries buried in forgotten eras of geological time, had been compacted into vegetable coal. And now *fire* was to accomplish its triumphs, and make the great levels and grand river-courses of the New World the scenes of a revolution unequalled since time itself was born. Coal and iron are wedded together. The new forgers of the thunderbolts toil in the roaring forges of Birmingham, Glasgow, Wolverhampton, and Woolwich. Watt, Arkwright, Brunel, Stephenson, are the Tubal-Cains and Wayland Smiths of our modern age. The Atlantic is bridged by their ocean steamers; and, where the genius of Europe's solitary believer in a Far West guided the caravels of Spain through the dread mysteries of the ocean to another world: the merchant navies of the nations speed, defiant of wind and waves, propelled by new powers that slumbered, abiding their waking-time, in that tiny spark lit by the forest-Prometheus. Tended by this willing slave, mechanic skill plies, unwearied, its great task. The work of old centuries is outsped in single years. Everywhere, and in all shapes, the new developments of this primitive element of science startle us with their novel and exhaustless powers. Northward, southward, and far into the wilds on the western horizon of civili-

sation, run the new iron highways, rush the iron horses, snorting and shrieking as they hasten onward to the Pacific, and pant till, with the ocean steam-ships of commerce, they shall engirdle the world.

Thus far has time already realized the fond dream of Columbus, which, as he believed, he read foretold in holy writ and shadowed forth darkly in mystic revelations of the prophets. The ends of the earth were to be brought together, and all nations, and tongues, and languages, united under the banner of the Redeemer.[1] Thus far also has experience confirmed his absolute deduction. The faint glimmering of light, seen once and again in passing gleams, was in reality the flashing of intellect in that still unrevealed world which was to gladden the eyes of the ocean-watchers with the morrow's dawn. The inhabitants of the new-found continent had already achieved the art of fire-making, and all else was conceivable of them. They were intelligent beings, fashioned in the same divine mould as those who then flattered themselves they were carrying the light of the true faith into benighted lands; men within whom lay, inert or in fullest vigour, the germs of all later triumphs of chemistry, electricity, mechanics: the steam-engine, the railway, the electric telegraph, and the greater, grander, mightier things that exist in undeveloped thought for the generations yet to be.

[1] Washington Irving's *Life of Columbus*, book i. chap. v.

CHAPTER VI.

THE CANOE.

THE USE OF TOOLS—NOVEL ARTS—TOOL-USING INSTINCTS—PRIMITIVE RIVER-CRAFT—GUANAHANE CANOE—OCEAN NAVIGATION—THE ETHNOLOGICAL PROBLEM—POLYNESIAN MIGRATIONS—ANCIENT CLYDE FLEETS—AFRICAN CANOE-MAKING—OREGON CEDAR CANOES—NATIVE WHALERS OF THE PACIFIC—THE PREHISTORIC BOAT-BUILDERS—MAWAI'S CANOES—THE PROA AND OUTRIGGER—THE TERRA AUSTRALIS INCOGNITA—PEOPLING OF THE PACIFIC ISLANDS—ABORIGINAL MARITIME SKILL—TRACES OF OCEANIC MIGRATION—THE BIRCH-BARK CANOE—THE ANCIENT BRITISH CORACLE—THE ESQUIMAUX KAIAK—THE PERUVIAN BALSA—PERUVIAN OCEAN NAVIGATION.

THE discovery of fire and its application even to such simple purposes of art as the hardening of the wooden spear, or the hollowing of the monoxylous canoe, suffice to illustrate the characteristics of man, not merely as a reasoning, but also as a tool-using, or as Franklin defined him, a tool-making animal. Whilst, however, an innate instinct seems to prompt him to supplement his helplessness by such means: mechanical science, the industrial and the fine arts, are all progressive developments which his intellect superinduces on that tool-using instinct. And through all the countless ages revealed to the geologist, with ever new orders of successive life; with beast, bird, crustacean, insect, and zoophyte, endowed with wonderful constructive instincts, and perpetuating memorials of architecture and sculpture, of which the microscope is alone adequate to reveal the exquisite beauty and infinite variety of design: yet so thoroughly is the use of tools the exclusive attribute of man, that the discovery of a single artificially shaped flint in the drift or cave-breccia, is sufficient to lead the geologist to infer indisputably that man has been there. The flint implement or weapon lies beside bones revealing kindred species to the sagacious elephant, or to those of carnivora allied to the dog, with its

wonderful instincts bordering on reason and the forethought of experience; yet no theorist dreams of the hypothesis that some wiser *Elephas primigenius*, in advance of his age, devised the flint spear wherewith to oppose more effectually the aggressions of the gigantic carnivora, remains and traces of which abound in the ossiferous caverns.

Man was created with a tool-using instinct, and with faculties capable of developing it into all the mechanical triumphs which command such wonder and admiration in our day; but he was also created with a necessity for such. "The heritage of nakedness, which no animal envies us, is not more the memorial of the innocence that once was ours, than it is the omen of the labours which it compels us to undergo. With the intellect of angels, and the bodies of earth-worms, we have the power to conquer, and the need to do it. Half of the industrial arts are the result of our being born without clothes; the other half of our being born without tools."[1]

With the growing wants of men as they gathered into communities, novel arts were developed; and the demands of each new-felt want called into being means for its supply. Artificers in brass and iron multiplied, and the sites of the first cities of the earth were adorned with temples, palaces, sculptured marbles and cunningly-wrought shrines. But still it was the lot of the sons of Adam to journey from that old East. God scattered them abroad from thence upon the face of all the earth; and as they wandered, westward and eastward, the elements of an acquired civilisation were inevitably left behind. All but the most indispensable arts disappeared during the process of migration; and when at length the wanderers found a new home, it might be "a land whose stones are iron, and out of whose hills thou mayest dig brass," but no arts are so speedily lost among migratory tribes as those of metallurgy. The hold of the accumulated wisdom and experience of successive generations must be partial and uncertain among an unlettered people, dependent on tradition for all knowledge excepting such as is practically transmitted in the operations of daily experience; for how very few of all the wanderers from the old centres of European civilisation to the wilds of the New World bring with them the slightest knowledge either of the science or the practice of metallurgy. Every chemical analyst knows what it is to receive

[1] *What is Technology? an Inaugural Lecture.* By George Wilson, M.D., Regius Professor of Technology, Edinburgh University.

iron pyrites for silver, and ochres for iron or gold. Even now the skill of the American miner has to be imported, and the copper-miners of Lake Superior are almost exclusively derived from Cornwall, Norway, or the mining districts of Germany.

With all our many artificial wants so promptly supplied, even in the remotest colony in which the Anglo-Saxon wanders

> "By the long wash of Australasian seas
> Far off, and holds his head to other stars,
> And breathes in converse seasons,"

we are slow to perceive how much we owe to the wondrous appliances of modern civilisation, and its social division of labour. The old Dutchman exported his very bricks across the Atlantic, wherewith to found his New Amsterdam on the banks of the Hudson; and the English colonist, with enterprise enough to mine the copper and iron of Lake Superior, still seeks a market for the ores in England, and imports from thence both the engineers and the iron wherewith to bridge his St. Lawrence. With such facts before us in relation even to the systematic colonization of a highly civilized and enterprising commercial nation: it is easy to understand what must have been the condition of the earth's primeval colonists, as they wandered forth successively from the great Asiatic hive, gradually displacing the savage fauna of the wilds they took possession of; or occupying, as chance directed them, the far-scattered islands of the sea. Their industrial arts were all to begin anew; and thus, wherever we recover traces of the first footprints of the old nomade in his wanderings across the continents of Asia or Europe, or follow him into the new world of America, or the newer continent of Australia and the islands of the Southern Ocean, we see that that non-metallurgic condition of primitive social life which is conveniently designated its Stone-Period, is not necessarily the earliest human period, but only the rudimentary state to which man had returned, and may return again, in the inevitable deterioration of a migratory era. The world was all before him, where to choose his place of rest. Its forests had to be cleared, its fields to be tilled, its veins of copper to be explored, and the long lost science of metallurgy to be recovered, and developed anew into industrial arts. Cast once more on his primal tool-using instincts, we can nevertheless frequently trace the individuality of the workman, the germs of original thought, and the novel applications of inventive skill, even in such infantile human arts. What is of still more importance: from the materials employed, and the artistic efforts at imitation displayed,

his former geographical relations can in many cases be inferred, and the physical conditions under which he wrought be determined.

But all evidence consistent with the Adamic origin of man points to a cradle-land for the human family towards the western borders of Central Asia, and remote from its coasts: probably in that range of country stretching between the head waters of the Indus and the Tigris. The only early history of man that we possess represents the postdiluvian wanderers journeying eastward, and at length settling on a plain that long afterwards remained one of the chief centres of history. But the arts there developed belonged exclusively to a far inland people; and to this day the rude craft of the Tigris and the Euphrates betrays a total absence of maritime instinct or skill in navigation. The highest effort of their boat-builders is little more than to construct a temporary raft, on which themselves and their simple freight may float in safety down the current of the great river. It is the same device as Juvenal describes, evidently without having seen it, as the painted earthenware boat of the Egyptians of the Nile:—

> "Imbelle et inutile vulgus,
> Parvula fictilibus solitum dare vela phaselis,
> Et brevibus pictæ remis incumbere testæ."[1]

The "fictilibus phaselis" of the poet were in reality only the Nile rafts, such as are in use to this day, formed of earthenware jars bound together by withes and cords, and covered with bulrushes. Like the corresponding river-craft of the Euphrates, these are steered down the Nile, never to return; for, on their arrival at Cairo, the rafts are broken up, and the jars sold in the bazaars. Such was the rudimentary condition of navigation in that great Asiatic hive of nations, where man chiefly dwelt for centuries, remote from the sea. But from thence the wanderers were scattered over the face of the whole earth; and by them were the nations divided in the earth, and the isles of the Gentiles divided in their lands. The primitive river-craft, therefore, found an early development into sea-craft, and oceanic migration gave a new character to the wanderings of the primeval nomades. Thenceforth, accordingly, those instinctive tendencies began to characterize certain branches of the human family, as leaders of maritime enterprise, which may be traced under very diverse degrees of social development; as in the Phœnicians, the Northmen, the Malays, and the

[1] Juvenal, *Sat.* xv.

Polynesians; while other tribes and nations, such as the Celts and Feejeeans,—representing, in some respects, opposite extremes of development,—though living on the coast, are tempted by no longings to voyage on the ocean's bosom.

The islands of the Central American archipelago were the first to reward the sagacity of Columbus, as he steered his course westward in search of the old East. The arts of their simple natives accordingly attracted his attention; and although he found among them personal ornaments of gold, sufficient to awaken the avaricious longings of the Spaniards for that fatal treasure of the New World, yet practically they were in total ignorance of metallurgic arts; and, happy in the luxuriance of an ocean-tempered tropical climate, they knew not the stimulus to ingenious industry which the requisites of clothing call forth in less genial climes. The natives of Guanahanè, or San Salvador, were friendly and gentle savages, in the simplicity, if not in the innocence of nakedness. Their only weapons were lances of wood hardened in the fire, pointed with the teeth or bone of a fish, or furnished with a blade made either of the universal flint, or more frequently with them, from the large tropical shells which abound in the West Indian seas. The native cotton-plant they had learned to turn to economical account, though heedless of the covering garments which modesty and luxury weave out of its useful fibres; but the chief mechanical ingenuity of the islanders was expended on the light barks to which they gave the now universal name of *canoe*. These were formed from the trunk of a single tree, hollowed by fire, with the help of their primitive adzes of flint or shell; and were of various sizes, from the tiny bark only capable of holding its solitary owner, to the galley manned by forty or fifty rowers, who propelled it swiftly through the water with their paddles, and baled it with the invaluable native calabash, which supplied every domestic utensil, and rendered them indifferent to the potter's art.

The canoe has a peculiar interest and value in relation to the archæology of the New World. To those who still deem the invention of new human species for the peopling of America a gratuitous assumption of science, it is the type of the older caravel of the primeval Columbus who first led the way thither from Asiatic or European shores. The American grey squirrel (*Sciurus migratorius*), as is well known, migrates in prodigious numbers, not only traversing wide tracts of country, but crossing broad rivers, in search of localities where its food abounds. But according to oft-

repeated popular accounts, it is also affirmed to embark at times on a rude craft, formed of a stray chip or piece of bark, and to cross by this means otherwise impassable lakes of great width. Had any such rudimentary trace of the boat-building instinct developed itself into even the rudest art among inferior animals, the geographical ranges of many species might have been materially changed: since we see that it wanted only the ship which man provided for them, to make the horse, the ox, the sheep, the hog, as naturally at home in the New World as himself; and to carry such pests as the brown rat, the mouse, and even the common house-fly, almost into every region to which European civilisation has penetrated.

To man alone, but by no means exclusively to civilized man, pertains the art of navigating not only rivers but oceans. With our wondrous steam-ships, wherewith we have bridged the Atlantic, we are apt to lose faith in the capacity of uncivilized man for overcoming such obstacles as the dividing oceans which had so long concealed the New World from the Old. About the year 1750, a canoe, now preserved in the museum of Marischal College, Aberdeen, was picked up by a ship on the Aberdeen coast, with an Esquimaux in it, still alive, and surrounded by his fishing gear; though the poor voyager died soon after, from being allowed to indulge to excess the voracious appetite which long abstinence had created. This example, though an exceedingly interesting, is not a solitary one; for Humboldt, in his *Views of Nature*, refers to other well-authenticated proofs of natives of America, supposed by him to have probably been Esquimaux from Greenland or Labrador, having been carried by currents from the Western to the Eastern Continent. Again, so recently as 1833, a Japanese junk was wrecked on the coast of Oregon, and some of its crew were subsequently rescued from captivity among the Indians of the Hudson's Bay Territory. Other evidences in proof of the probability of such modes of colonization of the New World will be noticed in a subsequent chapter; but these are sufficient to illustrate the relations between the primitive fleets of the Indian islands first explored by Columbus, and possible sources of the earliest settlers of America. To Columbus, indeed, with that well-defined faith in the spherical form of the earth which gave him confidence to steer boldly westward in search of the Asiatic Cipango, the Indian canoes suggested no such solution of difficulties of later origin; for the great Admiral died in the belief that he had reached the eastern shores of the continent of Asia.

Not so, however, was it with the Spanish savans of the fifteenth

century, to whose judgment the unaccomplished purpose of Columbus was referred. In the ancient city of Salamanca, there assembled in the Dominican convent of St. Stephen, in the year 1486, a learned and orthodox conclave, summoned by Prior Fernando de Talavera, to investigate the novel theory propounded by Columbus, and to decide whether, in that most Catholic of the kingdoms of Christendom, in which the Inquisition had just been established for the eradication of heresy, it was a permissible belief that the New World of the West existed or no. Columbus, studying the wisdom of a past then drawing to its close, by the clearer light of his later dawn, had already demonstrated the certainty of an ocean highway to the Western Hemisphere. The council of clerical sages included professors of astronomy, geography, mathematics, and other branches of science, as well as learned friars and dignitaries of the Church: perhaps as respectable an assemblage of cloister-bred pedantry and orthodox conservatism as that fifteenth century could produce. Philosophical deductions were parried by a quotation from St. Jerome or St. Augustine, and mathematical demonstrations by a figurative text of Scripture; and in spite alike of the science and the devout religious spirit of Columbus, the Salamanca divines pronounced the idea of the earth's spherical form heterodox, and a belief in antipodes incompatible with the historical traditions of our faith: since to assert that there were inhabited lands on the opposite side of the globe, would be to maintain that there were nations not descended from Adam, *it being impossible for them to have passed the intervening ocean.* This would be, therefore, to discredit the Bible, which expressly declares that all men are descended from one common parent.[1]

It may well excite a smile to find the very ethnological problem of this nineteenth century thus dogmatically produced by the sages of Salamanca in the fifteenth century, to prove that America could not exist. But we have not so entirely learned even now to harmonize our scientific belief and our religious faith, that we can afford to sneer at the follies of an age bewildered in the mazes of crude scientific theories and religious controversy. The bark in which Columbus did at length achieve the impossibility of reaching a new world beyond the Atlantic ocean, was in no degree more capable of braving the ocean's terrors than the navies of the Mediterranean had been a thousand years before. Nevertheless, it seems to some of our modern scientific theorists an easier thing to

[1] *Vide* Irving's *Columbus*, chap. iii.

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create a score of red, brown, and black Adams and Eves, wherewith to increase, multiply, and replenish each "realm," or province of the animal world, than to believe that man was transferred to new regions, and affected by their physical influences, just as we see the horse, ox, and hog have been in our own day.

Throughout the Polynesian archipelago, fragments of foreign vocabularies are the chief traces of that oceanic migration by which alone the descendants of a common race could people those distant islands of the sea. The recognition of certain Malay and Polynesian words in the language of the remote island of Madagascar, is one striking illustration of what such intrusive linguistic elements imply. "A navigation of three thousand miles of open sea," says Mr. Crawfurd, "lies between the Indian Islands and Madagascar, and a strong trade-wind prevails in the greater part of it. A voyage from the Indian Islands to Madagascar is possible, even in the rude state of Malayan navigation; but return would be wholly impossible. Commerce, conquest, or colonization are consequently utterly out of the question as means of conveying any portion of the Malayan language to Madagascar. There remains, then, but one way in which this could have taken place: the fortuitous arrival on the shores of Madagascar of tempest-driven Malayan *praus*. . . . The occasional arrival in Madagascar of a shipwrecked *prau* might not indeed be sufficient to account for even the small portion of Malayan found in the Malagasi; but it is offering no violence to the manners or history of the Malay people, to imagine the probability of a piratical fleet, or a fleet carrying one of those migrations of which there are examples on record, being tempest-driven like a single *prau*. Such a fleet, well equipped, well stocked, and well manned, would not only be fit for the long and perilous voyage, but reach Madagascar in a better condition than a fishing or trading boat. It may seem, then, not an improbable supposition, that it was through one or more fortuitous adventures of this description that the language of Madagascar received its influx of Malayan." Dr. Latham, in his *Man and his Migrations*, supplements the remarks of Mr. Crawfurd, by referring to well-authenticated voyages accomplished by escaped slaves from Mauritius. Impelled by the stern necessity of effecting their escape at all hazards from an intolerable bondage, these poor untutored slaves have been known to seize a canoe in the night-time, and with a calabash of water, and a few manioc or cassada roots, endeavour to

reach Madagascar, or even Africa, a distance of many hundred miles, without compass or guide, through the pathless and stormy ocean. Many perish in the voyage, but some succeed; and Dr. Latham quotes an instance communicated to him by one who had himself picked up a frail canoe, within about a hundred miles of the coast of Africa, containing five runaway slaves, who, with only a small quantity of water and rice, and their fishing-lines, had fled from a harsh French master at the Seychelles, and, guided by the stars, were making for the coast from which they had been kidnapped. The poor voyagers had notched on the side of their canoe the record of twenty-one days of weary hope; but one of them then lay dying in the bottom of the canoe, and the others only escaped the same fate by their timely rescue. We see, however, that frailer ships than our ocean steamers may have borne the fathers of nations to remotest isles; and that when that disputed proposition of oceanic migration is solved, the objections of St. Augustine and the Salamanca doctors, along with some of those of no less reputable modern doubters, to the possible affiliation of the red man and the white, may prove to rest on no better foundations than other obstacles to the belief in a new world, which seemed to the old monkish impugners of science in Salamanca equally cogent.

In this view of the case, the canoe of America is the type of a developed instinct pregnant with many suggestive thoughts for us. And the traces of the primeval ship-builder's art accumulate wonderfully so soon as attention is drawn to it: adding fresh evidence of an underlying history of maritime enterprise not yet embraced within our oldest accredited chroniclings. On the banks of the Scottish Clyde, the modern voyager from the New World looks with peculiar interest on the growing fabrics of those huge steamers, which have made the ocean, that proved so impassable a barrier to the men of the fifteenth century, the easy highway of commerce and pleasure to us. The roar of the iron forge, the clang of the fore-hammer, the intermittent glare of the furnaces, and all the novel appliances of iron ship-building, tell of the modern era of steam; but, meanwhile, underneath these very ship-builders' yards lie the memorials of ancient Clyde fleets, in which we are borne back, up the stream of human history, far into prehistoric times. The earliest recorded discovery of a Clyde canoe took place in 1780, at a depth of twenty-five feet below the surface, on a site known by the apt designation of St. Enoch's croft, when digging the foundation of a church dedicated, by a strangely

appósite misnomer, to the antediluvian father of Methuselah. This canoe, hewn out of a single oak, rested in a horizontal position on its keel, and within it, near the prow, lay a beautifully finished stone axe or celt, represented here, doubtless one of the simple implements with which this primitive ship of the Clyde had been fashioned into shape.

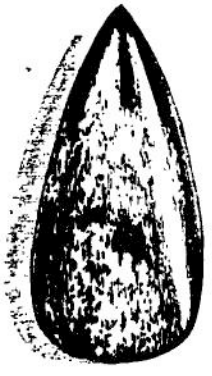


Fig. 2.—Clyde Stone Axe.

Subsequent to this at least sixteen other canoes have been brought to light. None of them equals it in interest; but others have been dug up at greater distances from the modern river's banks, buried in many feet of accumulated soil, underneath sites occupied by the most ancient structures of the city of Glasgow, and doubtless busy scenes of city life for more than a thousand years. It is difficult to apply any satisfactory chronological test whereby to gauge the lapse of centuries, since this primitive fleet plied in the far-inland estuary that then occupied the modern area through which the Clyde has wrought its later channel; but that the changes in geological, no less than in technological aspects indicate a greatly prolonged interval, cannot admit of doubt; and primitive man, alike in old Africa and in the New World, is still practising the rude ingenuity of the same boat-builder's art, which the allophylian of the Clyde pursued thousands of years ago.

In the interesting narrative of a cruise on the Tanganyika Lake of central Africa, by Captain J. H. Speke, the simple process there pursued in fashioning the native canoe, strikingly illustrates the means by which the imperfect stone implement could be turned to account for felling the forest oak, and shaping it into such vessels as that in which the stone axe was found. Writing in his journal on the 3d March 1858, Captain Speke says:—"All being settled, I set out in a long narrow canoe, hollowed out of the trunk of a single tree. These vessels are mostly built from large timbers, growing in the district of Ugubha, on the western side of the lake. The savages fell them, lop off the branches and ends to the length required, and then, after covering the upper surface with wet mud as the tree lies upon the ground, they set fire to and smoulder out its interior, until nothing but a case remains, which they finish by paring out with roughly constructed hatchets."

The islanders of the Southern Ocean, the natives of many parts

of the African continent, and the canoe-builders of the New World, all employ the agency of fire to supplement their imperfect tools. The stone axe of the St. Enoch's croft canoe is formed of highly polished dark greenstone. It measures five and a half inches in length by three and a half in breadth, and an unpolished band round the centre indicates where it has been bound to its haft, leaving both ends disengaged, as is frequently the case with the stone hatchets of the American Indians and the Polynesians. But the accompanying woodcut shows a more ingenious mode of hafting

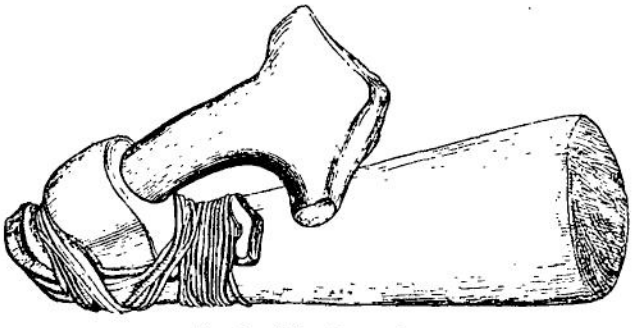


FIG. 3.—Clalam Stone Adze.

the stone adze for hollowing the charred trunk, and shaping it into a canoe. It is drawn from one brought by Mr. Paul Kane from the Straits of De Fuca, where such implements are in use by the Clalam Indians for constructing out of the trunks of cedar trees, large and highly ornamented canoes, in which they fearlessly face the dangers of the Pacific ocean. Some of these canoes, made out of a single tree, measure upwards of fifty feet long, and are capable of carrying thirty as a crew. They have thwarts from side to side, about three inches thick, and their gunwales curve outwards so as to throw off the waves. The bow and stern rise in a graceful sweep sometimes to a height of five feet, and are decorated with grotesque figures of men and animals. The Indian crew kneel two and two along the bottom, and propel the canoe rapidly with paddles from four to five feet long, while a bowman and steersman sit, each with his paddle, at either end. Washington Irving, in describing the Oregon Indians, remarks: "It is surprising to see with what fearless unconcern these savages venture in their light barks upon the roughest and most tempestuous seas. They seem to ride upon the wave like sea-fowl. Should a surge throw the canoe upon its side, and endanger its overturn, those to windward lean over the upper gunwale, thrust their

paddles deep into the wave, and by this action not merely regain an equilibrium, but give their bark a vigorous impulse forward."

Such fearless navigators find in the violent currents of the Straits of De Fuca, or the stormy waves of the Pacific, little to daunt them; and one of their most coveted, though now rarely attained, prizes is the whale, the blubber of which is eaten along with dried fish, and esteemed no less highly by them than by the Esquimaux. Since the encroachments of European settlements on their territories their game has greatly diminished, and few whales approach the coast; but, when an opportunity offers, the Indians are enthusiastic in the chase, and the process by which their prize is secured furnishes an interesting illustration of native ingenuity and daring. When a whale is seen blowing in the offing, they rush down to their canoes and push off, furnished with a number of large, strong seal-skin bags filled with air, each attached by a cord to a barbed spear-head, in the socket of which is fitted a handle five or six feet long. Upon coming up with the whale, the barbed heads are driven into it, and the handles withdrawn; until the whale, no longer able to sink from the buoyancy of the air-bags, is despatched and towed ashore.

Thus we see, to how much greater extent the ancient canoe may have sufficed for oceanic expeditions than our familiarity with modern shipping inclines us to believe possible. The old navigators of the Clyde were probably not a whit less fearless than the native whalers of the Oregon coast; and they had to face dangers fully equal to any of those to which the voyagers of the Pacific are exposed, whenever they navigated the lochs and island channels towards its mouth, or ventured beyond it, to face the gales and currents of the Irish Sea. The alluvium of the river Clyde has supplied an unusually rich store of illustrations of primitive ship-carpentry; but the disclosures of another Scottish locality also merit notice here. The carse, or alluvial plain of Falkirk, like that of Stirling, is intimately associated with some very memorable events of Scottish history. It is traversed by the vallum and chain of forts reared by Lollius Urbicus the Roman proprætor of Antoninus Pius in the early part of the second century, and is rich in memorials of later incidents already referred to. But underneath the ancient footprints of Scottish patriot and invader lie far older records. The Statistical Accounts record the discovery, in the vicinity of Falkirk, of an ancient boat buried some thirty feet below the surface of the same

carse from which the remains of a fossil elephant were exhumed in excavating the Union Canal in 1821. In the earlier part of the previous century a sudden rise of the river Carron undermined a portion of its banks, and exposed to view another canoe of unusually large dimensions, at a depth of fifteen feet beneath successive strata of clay, shells, moss, sand, and gravel. Sir John Clerk has described it with great minuteness in the *Bibliotheca Topographica Britannica* as an antediluvian boat; and in an extract from a contemporary newspaper it is stated to have been finely polished, perfectly smooth, both inside and outside, and formed from a single oak-tree, with pointed stem and square stern. Those traces of primitive human art have already been referred to in the *Prehistoric Annals of Scotland*, but a further discovery in the same locality confers a fresh interest upon them. Soon after the publication of that work, when on a visit to Falkirk, I was

FIG. 4.—Grangemouth Skull.

shown by Dr. G. Hamilton a human skull, which at once attracted my attention from its marked correspondence to the brachycephalic crania of ancient British graves. It is figured here, from a careful drawing executed at a later date, from which it will be seen that the skull is imperfect in the base, and the facial bones are wanting. It is well developed, according to the type of crania of the early Scottish tumuli. But what confers a special interest on it is, that it was found, in the same alluvial carse-land as the ancient canoes and the fossil bones of the *Elephas primigenius*, twenty feet below the surface, in a bed of shell and gravel, when digging the area of the large Grangemouth lock of the Union Canal, on the 29th of June 1843. Buried at such a depth in the detritus of the river-valley, it may be regarded as a record of the man of that area, of the period when the valleys of the Forth and Carron were

navigable arms of the sea, and their shores were peopled by a race of fishermen contemporaneous with the whalers of Dunmyat and Blair-Drummond Moss, and with the monoxylous boatmen of the Clyde. Thus, while in one case we recover traces of the tools of the prehistoric ship-carpenter, in another we seem to alight on evidences of his own physical characteristics, corresponding to those which have already been recognised as appertaining to an early race of the Scottish stone period.

The bee, according to Huber, when interrupted in its cell-building operations, adapts its structure to the novel circumstances imposed on it, altering the otherwise invariable hexagon. The bird, in like manner, accommodates the form of its nest to the peculiarities of the chosen locality. We need not wonder, therefore, to find the primitive arts of man, while disclosing a correspondence in many respects so remarkable, also revealing constant traces of such adaptation as pertains to his higher attributes of reason and experience. Among many of the islands of the Southern Ocean, the boats are simple wooden canoes, pointed at either end, and propelled through the water with the paddle; but the barks of the true Polynesians are more elaborate and ingenious. Frequently they are double, with a raised platform or quarter-deck; and they are invariably provided with an outrigger, an article seemingly of Malay origin. So essential, indeed, is the latter deemed for the safe navigation of their ocean archipelago, that the most remarkable characteristic recognised by the Tahitians, when Captain Cook's vessels first revealed to them the wonders of European civilisation, was the want of the indispensable outrigger. Throughout the mythology of oceanic Polynesia, Mawai, the upholder of the earth, and the revealer of the secrets of the future, plays a prominent part. In one of his prophecies, Mawai foretold that a canoe such as had never been seen before, a canoe without outriggers, should in process of time come out of the ocean. But to the mind of the Tahitian, an ocean canoe without outriggers was so impossible a thing that they laughed their prophet to scorn; whereupon Mawai launched his wooden dish on the waters, which swam without outriggers, and the Tahitians thenceforward looked for the strange marvel of the outriggerless canoe. Accordingly when Cook visited the islands, his ship was regarded as the fulfilment of the prophecy, and still English vessels are frequently called Mawai's Canoes. The mythic prophecy seems in reality one of those vague traditions of ancestral intercourse with other

members of the human family, such as, among the Aztecs, led to the belief that the ships of Cortes had returned from the source of the rising sun, with Quetzalcoatl, the divine instructor of their forefathers in the arts of civilisation.

The *proa* of the Pacific is a product of the naval architecture and maritime skill for which the Malays are specially distinguished among the islanders of its archipelagos. It is generally formed of two pieces of wood joined lengthways, and sewed together with bark; and is found chiefly within the region of the trade-winds, for which it is peculiarly adapted. The indispensable outrigger consists of two spars fastened athwart the vessel, and projecting about half its length to windward. The ends of these are attached to a heavy beam, sometimes in the shape of a small canoe; and to mariners familiar only with the light proa, or the piroque, the use of large sails on the open sea without an outrigger must seem a miracle requiring Mawai's aid. The outrigger is also used in some of the small narrow canoes; and propelled by a rude sail of matting, or sometimes only by the paddle, and protected by this contrivance against the danger of upsetting, the fearless ocean voyagers find their way from island to island, through the most tempestuous seas. We are, in truth, in danger of forgetting, amid the luxuriant appliances of our ocean steamships, how moderate are the means which, in this, as in other requirements of man, suffice to supply all the necessities of his being.

The population of the great Polynesian archipelago presents many highly interesting and suggestive features, bearing closely on the question of oceanic migration. The area of Polynesia proper extends from the small islands westward of the Pellews to Easter Island, and from the Marriannes and the Sandwich Islands to New Zealand on the south. The means of acquiring animal food in nearly all the islands is almost exclusively limited to the sea. The cocoa-nut, the taro, the banana, and other vegetable food, constitute their chief diet; and hence, possibly, one source of the tendency to cannibalism so horribly developed among some of the island group. In Tonga-tabû and Easter Island, as well as in the Micronesian Rota, Tinian, Ualan, and throughout the Caroline group, remains of massive stone buildings, the origin or use of which is wholly unknown to the natives, reveal traces of an extinct civilisation; and also afford some possible clue to the strange ethnological phenomena of the Oceanic archipelago. Professor Dana, who, as geologist to the United States' Exploring

Expedition, had abundant opportunities for observation, came to the conclusion that an immense area in the Pacific has for ages been gradually subsiding, and that the numerous Lagoon Islands mark the spots where what were once the highest peaks of mountains have finally been submerged. Mr. Hale, the philologist of the same expedition, gathered sufficient data from a European who had been resident for a time on the island of Bonabe, in the Caroline archipelago, and from his own observations, to satisfy him that the remarkable stone structures, both Ualan and Bonabe, were erected when the sites on which they stand were at a different level from what they now occupy. "At present they are actually in the water; what were once paths, are now passages for canoes, and when the walls are broken down the water enters the enclosure."

Such an idea seems like a glimpse of far-reaching truths relative to the unwritten history of that recently explored Southern Ocean. When Columbus discovered the islands of the New World, he found them lying in thickly-clustered groups, and ere long reached the mainland of a great continent, which lay in close vicinity to its island satellites. But it was altogether different with the Columbus of the Southern Ocean. A strange Antarctic as well as an Australian continent lay there also, awaiting new discoverers; but far beyond their coasts the Pacific and Southern groups dotted the wide expanse of ocean, like the stars that lose themselves in the deep abysses of night. We read with wonder, as strange as that which rewarded the revelations of the Western Ocean in the closing years of the fifteenth century, of the voyages and discoveries of Byron, Wallis, Carteret, and of Cook and later explorers of the South Pacific Ocean. When Captain Cook reached the Cape on his return from his second expedition, in 1774, he had sailed no less than twenty thousand leagues, through unknown seas, since he left the same point twenty months before. His grand quest was in search of the *Terra Australis Incognita*, a continent which it was assumed must exist in the Southern Ocean, as a counterpoise to the land occupying so large a portion of the northern hemisphere; but instead of this, the voyagers sailed for days and weeks through a vast ocean, arriving by chance, now and again, at some little island, cut off from all the world besides, yet tenanted by human beings. And, as later voyagers have noted, on sailing once more into the limitless horizon, after another long interval, in which many hundreds of

miles have been passed, another island-speck appears; and not only is it also inhabited, but affinities of speech, mythology, and the primitive ingenuity of native arts, all concur in proving a community of origin. To account satisfactorily for so puzzling a problem of ethnology has taxed the ingenuity and skill of some of our ablest elucidators of the history of man. The botanist was long in doubt as to the laws which regulate the distribution of plants over the globe, and was called on at once to explain the occurrence of a peculiar flora in islands like those of the Pacific, cut off from the rest of the world by a vast expanse of ocean; and again, to reconcile the fact of the same or allied species being diffused over areas separated from each other by barriers equally impassable. But Professor Edward Forbes and Dr. Hooker have effectually cleared up the difficulties which the botanist experienced; and a similar mode of dealing with those encountered by the ethnologist seems to have passed through the mind of Darwin, as he explored the peopled islands of the Southern Pacific. But other subjects engaged his attention, and fill the interesting pages of his *Voyage of a Naturalist*, and it is only incidentally that he observes: "Nor can I quite pass over the probability of the former existence of large archipelagos of lofty islands, where now only rings of coral rock scarcely break the open expanse of the sea, throwing some light on the distribution of the inhabitants of the other high islands now left standing, so immensely remote from each other, in the midst of the great ocean."

Time is the element most frequently required in the hypotheses of the ethnologist. The geologist, freed from the trammels of diluvial systems, takes to himself unlimited ages for the working out of the phenomena revealed to him in the earth's crust; and, with the command of requisite time, the whole cosmical history moves onward under the operation of laws of nature little differing from those still in force. The palæontologist and the botanist, guided by the same laws, see many mysteries disappear; but the ethnologist is restricted in such license by historical evidence, which he may critically elucidate, but which he dare not ignore. The very license, however, which the geologist has thus acquired may tempt him to its abuse; and the ethnologist is apt to stumble at geological intervals of vast duration assumed in relation to those most recent phenomena in which he is chiefly interested. In this respect it will probably be found that, in many post-tertiary formations now associated with the traces of man and his arts,

a greater antiquity has been demanded by the geologist than is indispensable to account for their deposition. And so also may it be with the theory of submergence of a southern continent, or great archipelago of thickly-clustering and lofty islands. That the coral reefs and atolls of the Southern Pacific prove that an immense area in that ocean has for ages been slowly sinking beneath its waves, is an opinion universally admitted by geologists. Dana assigns such changes to a period "probably within and since the tertiary epoch;" and the facts noted in reference to the ruined structures at Bonabe prove that they were prolonged into times coeval with human history. If such a process of subsidence is still in progress, many of the low coral islands of the Pacific must disappear beneath the ocean in the lapse of comparatively few centuries; and by such natural causes, continuous island-chains may have been engulfed, which once formed natural resting-places, by means of which the fleets of Polynesia piloted their way to islands now separated by seemingly impassable ocean barriers, and even found their way to Southern America.

We must not, however, be misled here, any more than in our estimate of possible Atlantic voyagers, by the undue contempt with which the European is apt to gauge the capacity of such island mariners in their native craft. At Vanikoro, the native canoe is a mere rudely-fashioned trunk of a tree, sufficiently grooved to afford foot-hold; yet to this the islander attaches an outrigger, spreads a mat for his sail, and boldly launches forth into the ocean, though probably few Europeans would be induced to venture in such a craft on the stillest pool. Dr. Pickering, when illustrating the ideas of ocean migration which he was led to form from intimate observations of widely-scattered and very diverse branches of the human family, remarks: "Of the aboriginal vessels of the Pacific, two kinds only are adapted for long sea-voyages: those of Japan, and the large double canoes of the Society and Tonga groups. In times anterior to the impulse given to civilized Europe, through the noble enterprise of Columbus, Polynesians were accustomed to undertake sea-voyages nearly as long, exposed to equal dangers, and in vessels of far inferior construction. However incredible this may appear to many, there is sufficient evidence of the fact. The Tonga people are known to hold intercourse with Vavao, Samoa, the Feejee Islands, Rotuma, and the New Hebrides. But there is a document, published before those seas were frequented by whalers and trading-vessels, which shows a more extensive aboriginal acquaintance

with the islands of the Pacific. I allude to the map obtained by Forster and Cook from a native of the Society Islands, and which has been shown to contain not only the Marquesas, and the islands south and east of Tahiti, but the Samoan, Feejee, and even more distant groups. Again, in regard to the principles of navigation, the Polynesians appear to possess a better knowledge of the subject than is commonly supposed, as is shown from recent discoveries at the Hawaiian Islands. One of the Hawaiian headlands has been found to bear the name of *The starting-place for Tahiti;* the canoes, according to the account of the natives, derived through the missionaries, leaving in former times at a certain season of the year, and directing their course by a particular star." Thus we perceive, notwithstanding the silence of history, oceanic migration presented no insurmountable obstacle to the fearless and migratory Polynesian, with his naturally wandering disposition, and his aptitude for maritime enterprise. Hence the marvel, that each little coral and volcanic island, scattered through the vast ocean that spreads its expanse of waters between Asia and America, is found with its human occupants, its aboriginal arts, and its little fleet of ocean canoes.

But leaving such glimpses of oceanic migration, there is another aspect in which the ingenuity of the primitive boat-builder of the New World is exhibited, which is highly characteristic in itself, and also worthy of notice from some elements of comparison it affords with the primeval ingenuity of the ancient world. Throughout the islands of the American archipelago, and among the southern tribes, where large and freely navigable rivers abound, the native canoe was made of various sizes, but invariably of the trunk of a tree hollowed out, and reduced to the required shape. Such appears to be the normal type of the primitive mariner's craft; but where obstacles interfere with its accomplishment, the rudest races devise means to obviate the difficulty. The Californian canoe is a mere rude float made of rushes, in the form of a lashed-up hammock; while those of the Navigator Islands, in the Pacific, —so called by La Perouse, their first discoverer, owing to the graceful shape and superior workmanship of these vessels,—are formed of pieces of wood, sewed together by means of a raised interior margin. In the latter the skilful carpenter is guided rather by taste or utility, than by necessity, for the Navigator Islands are fertile and populous, and clothed to the summits of their lofty hills with luxuriant forests and richly-laden fruit-trees.

But across the wide area of the northern continent of America, which stretches from the Gulf of the St. Lawrence to the Pacific, a different combination of physical circumstances has given bent to the development of Indian ingenuity in the art of boat-building. In the St. Lawrence itself, and throughout all its principal tributaries, navigation is constantly impeded by waterfalls or rapids, which constitute an insurmountable barrier to ordinary navigation. In like manner the whole country along the northern and southern shores of Lake Ontario, the valley of Ottawa, reaching towards Georgia Bay and Lake Superior, and much of the route between that and the Rocky Mountains, is a chain of lakes or interrupted river navigation. Hence all the principal routes of travel consist of lines of lake and river united by "portages," or carrying-places, over which the canoe and all its contents have to be borne by the native boatmen, or voyageurs, as the French Canadians and half-breeds of the traders and Hudson's Bay Company are called. For such mode of transport the wooden canoe would be all but impracticable; and accordingly, probably ages before voyageurs of European descent had learned to handle such canoes, the native Indian devised for himself his light and graceful bark-boat, made from the rind of the *Betula papyracea*, or canoe-birch. This species of American birch grows in great abundance, and where the soil is good often acquires a height of seventy feet. The wood is of little value, as it soon decays on exposure, but its tough and durable bark is invaluable to the American Indian, and scarcely less indispensable to his European supplanter. The birch-bark wigwam is the common residence of most of the tribes from the Atlantic coast till the region frequented by the buffalo is approached, where their skins supply a superior substitute. But the most important use of the bark is as the material of the portable canoe. Its frame consists of a series of light ribs attached to a rim of cedar-wood, and covered with a sheathing of thin, flexible slips of the same, placed longitudinally. Over this the birch-bark is laid, generally rising into a gracefully curved stem and stern; and not unfrequently the whole receives an artistic finish by being decorated with figures of animals, or other Indian pictorial devices. Such vessels are made of all sizes, from the small hunting-canoe of twelve feet long, and weighing only twenty pounds, to the *canot de maître*, or large north-western canoe of the fur trade, which measures thirty-six feet, and is propelled by fourteen rowers.

Portable boats were not unknown to the ancient tribes of

the British Isles, though there was little necessity there for their general use, and less skill was applied to their construction. In Mr. Shirley's *Account of the Dominion of Farney in Ulster*, a curious example of a portable boat is described, formed of the trunk of an oak-tree, measuring twelve feet in length by three feet in breadth, hollowed out, and furnished with handles at both ends, evidently for facility of transport from one loch to another. The district where it was found is one abounding with small lakes, such as the ancient Irish chiefs frequently selected as chosen retreats on which to construct their crannoges, or other insulated strongholds, beyond the reach of hostile surprise.

A closer analogy may be traced between the Indian birch-bark canoe and the coracle of the ancient Briton described by Julius Cæsar, which was made of wicker-work covered with skins. But the same kind of canoe is in use at the present day on the lakes in the interior of Newfoundland, where the Montagnars from the Labrador coast frequently spend the summer. Their birch canoes are carefully secured for the return voyage to the mainland; and a deer-skin stretched over a wicker frame supplies all the requisites for inland navigation. But the true counterpart to the British coracle is the Esquimaux kaiak, which, like it, consists of a light frame covered with skin; and as this is brought over the top, and made to wrap round the body of its solitary occupant, it enables the amphibious navigator, both of the North Pacific and Greenland seas, to brave a stormy ocean in which no open boat could live.

Hamilco, the Carthaginian, according to Festus Avienus, witnessed the ancient Britons "ploughing the ocean in a novel boat; for, strange to tell, they constructed their vessels with skins joined together, and often navigated the sea in a hide of leather." Upwards of four centuries later, Cæsar found the same stormy sea navigated by the southern Britons in coracles made of a hide stretched over a light timber and osier frame. When, in the sixth century, we once more recover, in the lives of the Irish Saints, some glimpse of maritime arts, it is in the same coracles—sometimes made of a single hide, and in other cases, such as the ocean currach of St. Columba, of several skins sewed together,—that the evangelists of Iona crossed the Irish sea, visited the Orkney and Shetland Islands, and even, as there is reason to believe, preceded the Northmen in the discovery of Iceland. The old Scottish historian Bellenden, writing in the sixteenth century, asks: "How

can there be greater ingyne than to make a boat of a bull's hyde bound with nothing but wands? This boat is called a currock, with which they fish, and sometimes pass over great rivers." Yet this singularly primitive boat is still to be met with in the river-estuaries of Wales, and on various parts of the Irish coast: the counterpart of the Esquimaux *kaiak*, or the *baydar* with which the Aleutian Islanders navigate the intervening ocean between Asia and America. Dr. Pickering remarks, on encountering it to the north of the Straits of De Fuca:—"From its lightness, elegance, and the capacity of being rendered impervious to both air and water, I could not but admire its perfect adaptation to the purposes of navigation; for it seemed almost to enable man to take a place among the proper inhabitants of the deep. Such vessels are obviously fitted to cope with the open sea, and, so far as the absence of sails permits, to traverse a considerable expanse of ocean."

The same intelligent explorer sums up the results of his opportunities of observation on types, as he believes, of all the most diverse varieties of mankind, by affirming: "I have seen, in all, eleven races of men, and though I am hardly prepared to fix a positive limit to their number, I confess, after having visited so many different parts of the globe, that I am at a loss where to look for others." Nevertheless, he unhesitatingly pronounces the aboriginal Americans—alike as indicated in the sculptures of Mexico and Yucatan, the carvings of the ancient mounds of Ohio, and the portraits and living features of many existing tribes,—to be of the Mongolian race, and therefore of Asiatic origin; and in speaking of the ingenious *baydar* of the Aleutian Islands, he adds: "The presence of these skin-canoes among the Esquimaux of the Greenland Seas, was long regarded as a proof of the existence of a north-west passage; and it likewise indicates the course of human migrations. I have not examined authorities to ascertain whether the passage across Behring Straits is practicable for a people in the purely hunter state. But in view of the large portion of North-west America in contact with maritime tribes, these tribes have appeared to me the most probable source of the inland population."

Indispensable as means of oceanic migration are to every theory of American colonization, excepting that which ranks the Red Man among the indigenous fauna of the New World, the peculiar characteristics of its tiny fleets are full of interest for us, and none more

so than the baydar of the Pacific, or the kaiak of the Greenland Seas. In just such a fragile vessel, the poor Greenlander had crossed the wide ocean, when rescued off the Scottish coast, only to perish on the long looked-for shore. In such a bark, therefore,—to which the coracle of the primeval Columbus who led the way from the continent of Europe to the untrodden wilds of Britain, in all probability bore a close resemblance,—the passage from the Asiatic to the American shores is no impossible feat.

It is a curious fact, well worthy of notice, that throughout the American continent, seemingly so dependent on maritime colonization for its settlement by man, the use of sails as a means of propelling vessels through the water appears to have been almost unknown. Prescott, when describing the singular suspension bridges, made of the tough fibres of the maguey, with which the Peruvians spanned the broad gullies of their mountain streams, adds: "The wider and more tranquil waters were crossed on *balsas*, a kind of raft still much used by the natives, to which sails were attached, furnishing the only instance of this higher kind of navigation among the American Indians."[1] This description of the historian, however, is apt to convey a false impression; for, although the Peruvians were so essentially an agricultural and unmaritime people, the use of sails in their coasting trade, constitutes one noticeable point of superiority over all other nations of the New World. Attention is specially directed to this by an incident recorded in the second expedition for the discovery of Peru preparatory to its conquest. Bartholomew Ruiz, the pilot of the expedition, after lingering on the coast, near the Bay of St. Matthew, stood out into the ocean, when he was suddenly surprised by the sight of a vessel in that strange, silent sea, seemingly, in the distance, like a caravel of considerable size, with its broad sail spread before the wind. "The old navigator was not a little perplexed by this phenomenon, as he was confident that no European bark could have been before him in these latitudes, and no Indian nation yet discovered, not even the civilized Mexican, was acquainted with the use of sails in navigation." As he drew near he found it a native *balsa*, formed of huge timbers of light, porous wood, and with a flooring of reeds raised above them. Two masts sustained the large, square, cotton sail, and a movable keel and rudder enabled the boatman to steer. On board of it Ruiz found ornaments displaying great skill, wrought in silver and gold, vases and mirrors of burnished silver,

[1] *Conquest of Peru*, vol. i. B. 1. ch. ii.

curious fabrics, both cotton and woollen, and a pair of balances made to weigh the precious metals. Here were the first undoubted evidences of the existence of that strange seat of a native American civilisation, among the lofty valleys of the Southern Andes, which he was in search of. The balsa's crew included both men and women, who carried with them provisions for their voyage, and had come from a Peruvian port some degrees to the south. Like older voyagers of the Mediterranean, the Peruvian pilots were wont to creep timidly along the shore; but the Spaniards encountered them in the open Pacific, where no European prow had ever sailed. Caught by a sudden gale their bark might have been borne far off among the islands that stud the Southern Ocean, and here was the germ of a race of islanders, to whom, after a few generations, the memory of their Peruvian ancestry would have survived only as some mythic legend, like the Manco Capac of their own Incas, or the Mawai of the Polynesian archipelago.

CHAPTER VII.

TOOLS.

MAN THE ARTIFICER—REVELATIONS FOR THE FUTURE—THE LAW OF REASON—MAN'S CAPACITY FOR DETERIORATION—WHAT IS A STONE-PERIOD?—MATERIALS OF PRIMITIVE ART—EVIDENCES OF THEIR GEOGRAPHICAL ORIGIN—INDICATIONS OF EXTINCT RACES—A PRIMITIVE SHELL-PERIOD—SHELL CURRENCY—SHELL NECKLACES—COSTLY SEPULCHRAL OFFERINGS—CHINOOK FUNERAL RITES—MOTIVES FOR HUMAN SACRIFICE—ARTS OF THE SOUTH PACIFIC—MALAYAN INFLUENCE—FEEJEEAN; CONSTRUCTIVE SHELL—CARIB SHELL-IMPLEMENTS—NATIVE MONUMENTS OF ST. DOMINGO—ANCIENT ROCK-SCULPTURES—HONDURAS FLINT IMPLEMENTS—MEXICAN MIGRATION-SCENE—SEPULCHRAL DEPOSITS OF TENNESSEE—TROPICAL SEA-SHELL RELICS—ASIATIC SACRED SHELL-VESSELS—THE FLINT-EDGED SWORD—THE LEAGUE OF THE FIVE NATIONS—IROQUOIS INFLUENCE—FATE OF SAVAGE NATIONS.

As the type of oceanic migration, the canoe claims a prominent place among the primitive arts of man. In it we see the germs of commerce, maritime enterprise, and much else that is indispensable to any progress in civilisation. But the primitive ship implies the existence of tools; and, as we have already seen, probably owed its earliest fashioning to the useful service of fire. Intelligent design was working out the purposes of reason by processes which, even in their most rudimentary stage, reveal the characteristics of a new order of life, compared with which the tool-born ant, the spider, and the bee seem but as ingenious self-acting machines, each made to execute perfectly its one little item in the comprehensive plan of creation.

As industrial artificers, the creatures so far beneath us in the scale of organization seem often to put to shame our most perfect workmanship; yet provided with no other instruments than the eye and the hand, but guided by that intelligent reason which distinguishes man from the brutes, we see him, even as an artificer, presenting characteristics of the Divine image, which are altogether wanting in the lower animals. Labour is for them no sternly imposed necessity, but an inevitable process, having only one possible

form of manifestation; producing in its exercise the highest enjoyment the labourer is capable of; and in its results leading our thoughts from the wise, unerring, yet untaught worker, to Him whose work it is, and of whose wisdom and skill the workmanship, not less than the workman, appears a direct manifestation. It is not so with man. As the wise preacher has told, God made him upright, but he has sought out many inventions. The capacity of the workman is a divine gift, but the work is his own, and too often betrays, in some of its most ingenious devices and results, anything rather than a divine origin.

If we conceive of some superior intelligence seeking hereafter to arrive at an adequate knowledge of man, and of his relative rank in the scale of animal life, by means of his fossil remains: remarkable as are the differences which his osteological relics present, when compared with those of other vertebrata, a singularly imperfect conception would be formed of the place he had actually filled in the economy of life. But for such an observer other than mere osteological traces are in store. The strange armaments of Eastern enterprise; the commercial navies of the Jasons, the Hirams, and the Ptolemys of old; the viking galleys of the Northmen; the caravels of the Mediterranean; the war galleys and merchant ships of Sidon and Carthage, of Gadir, Massala, Pisa, and Venice; the royal argosies and proud armadas of Spain; the lone Arctic explorers and the stately fleets of England; oaken three-deckers, richly freighted East-Indiamen, and wondrously constructed ocean steam-ships; with gold, and gems, and all their varied stores: have gone down into the ocean's depths.

What a treasury of art and history is already imbedded in the basin of the Mediterranean! Along the tracks of commerce in the pathless ocean what marvellous formations are being treasured, in the strata that shall rise to form new continents, when perchance the submerged coral reefs of the Pacific shall be the summits of lofty mountains, in the long-sought *Terra Australis Incognita*, known and found at last. Stabiæ, Herculaneum, and Pompeii, show what earthquakes and volcanos may effect. The cliff of Guadaloupe, with its fossil skeletons, pottery, stone arrow-heads, and even carved wooden relics, all petrified into limestone rock, reveal the results of one of the ordinary processes by which the detritus of shells and corals, with the consolidated sand, solidify into stone. If ours be not the latest stage of being, but is to be succeeded by "new heavens and a new earth," marvellous indeed are the revelations which those posthistoric strata have yet to

disclose. But even they will scarcely suffice to reveal the most striking characteristics of a being for the first time introduced into that long chain of organic life, on whom the external economy of nature reacts in a way it never did on living being before; in whom all external influences are subordinated to an inner world of thought, by means of which he is capable of searching into the past; anticipating the future; of looking inward, and being a law unto himself. His nature embraces possibilities of the widest conceivable diversity, for his is no longer the law of instinct, but of reason: law, therefore, that brings with it conscious liberty, and also conscious responsibility. If our present mode of viewing him permitted the full consideration of all that is implied in the probation of a being endowed, as we are assured alike by nature and revelation, with not only life but immortality, the moral constitution of this, the latest of the creations of God, would involve very lofty themes; but while we cannot, even from the ethnologist's point of view, regard man solely as the zoological *Bimana*, and treat him like the mere zoologist, "who shows a Newton as he shows an ape:" our present inquiry is limited to the influences of his moral and intellectual nature in their artistic manifestations.

But an important and seemingly conflicting element arises out of the capacity of man for moral progression, to which some ethnologists fail to give due weight. A suggestive thought of Agassiz, relative to certain real or supposed analogies between the geographical distribution of species of simiæ, and especially the anthropoid apes, and certain inferior types of man, sufficed as the nucleus of Gliddon's elaborate monkey-chart in the *Indigenous Races of the Earth*, illustrative of the geographical distribution of monkeys in relation to that of certain types of men. Notwithstanding the very monkeyfying process to which some of the illustrations of inferior human types have been subjected in this pictorial chorography, the correspondences are not such as to carry conviction to most minds. But, assuming, as a supposed *reductio ad absurdum*, the descent of all the diverse species of monkeys from a single pair, Mr. Gliddon thus sums up his final observations: "I propose, therefore, that a male and female pair of the 'species' *Cynocephalus Hamadryas*, be henceforward recognised as the anthropoid analogues of Noah, Shem, Ham, and Japhet; and that it must be from these two individuals that, owing to transplantation, together with the combined action of aliment and climate, the fifty-four monkeys represented on our

chart have originated. It is, notwithstanding, sufficiently strange, that, under such circumstances, this 'primordial organic type' of monkey should have so highly improved in Guinea, and in Malayana, as to become *gorillas* and *chimpanzees, orangs* and *gibbons;* whereas on the contrary, the descendants of 'Adam and Eve' have, in the same localities, actually deteriorated into the most degraded and abject forms of humanity." In reality, however, whatever may be said about the possibility of such simian development, possible human deterioration is an inevitable attribute of the rational, moral free-agent, man: capable of the noblest aspirations and of wondrous intellectual development, but also with a capacity for moral degradation such as belongs to him alone of all created beings. The one characteristic, as well as the other, separates man by an impassable barrier from all those other living creatures, that might appear in some respects gifted with endowments akin to his own.

Man, as a tool-using artificer, seems to have a rival in the beaver, felling its timber, carrying its clay, and building its dam; in the spider weaving its web, more perfect than any net of human fisher; and even in the squirrel with its provident hoard of well-secured winter store, or the monkey employing the cocoa-nut and other shell-fruit as missiles. But in such artificial appliances there is nothing obsolete, nothing inventive, nothing progressive; neither is there any deterioration. Their most wonderful arts, as the cell of the bee, the web of the spider, or the beaver's dam, are executed without a lesson, and are improved by no experience. The bee emerges into its last stage of perfect life, or the spider is hatched from its egg, and proceeds to do without any instruction, what we could scarcely attempt after much training; whereas the child born amid the most highly developed civilisation,—the son of a Watt, a Stephenson, a Brunel,—if reared from infancy to manhood without any knowledge of mechanical science or the industrial arts, would start anew from the rudimentary instincts of the tool-using animal, and expend his ingenuity, not perhaps without some traces of hereditary mechanical genius, on the primitive materials of flint, stone, horn, or shell.

Man depends for all on his teachers; and when moral and intellectual deterioration return him to the toolless condition of the totally uncivilized nomade, he is thrown back on the resources of his infantile reason and primary instincts, and reaches that point from which the primeval colonist has had to start anew in all lands, and work his way upwards, through stone, and bronze, and iron

periods, into the full co-operation of a civilized community, treasuring the experience of the past, and making for itself a new and higher future.

The periods of the archæologist, thus designated as THE STONE PERIOD, THE BRONZE PERIOD, and THE IRON PERIOD, have been brought into some discredit, in part by what, as a general system, must be regarded only as a hypothesis, being assumed by some who have adopted it, as involving facts of no less indisputable and universal application than the periods of the geologist. In part also, their non-acceptance is due to wilful errors of their impugners, and to the want of appreciation of the inevitable characteristics which pertain to transitional periods, such as chiefly come under the European archæologist's observation. So far as the aboriginal American is concerned, the New World is in the first transitional state still: that of a Stone-Period, very partially affected by the introduction of foreign-wrought weapons and implements; and scarcely indicating, among the numerous tribes of North America, any traces of the adoption of a superinduced native metallurgy. Such therefore appears to me to be a condition of things, the comparison of which with traces of a corresponding stage in the early ages of Britain, may be of use in clearing the subject from much confusion.

The special characteristics of the native civilisation which the early Spanish adventurers found already existing in Mexico and Central America, will come under review at a later stage; but it cannot admit of question that throughout the whole Red Indian forest-area metallurgic arts were unknown, as they still are among the Indians of the North-west after an intercourse of upwards of three centuries and a half with Europeans. Copper, indeed, was wrought among them, but it was used without any application of fire, and as what may be most fitly designated a mere malleable stone. In Britain, as I have already observed, "the working of gold may have preceded the age of bronze, and in reality have belonged to the Stone-Period. If metal could be found capable of being wrought and fashioned without smelting or moulding, its use was perfectly compatible with the simple arts of the Stone-Period. Masses of native gold, such as have been often found both in the Old and the New World, are peculiarly susceptible of similar application by the workers in stone; and some of the examples of Scottish gold personal ornaments fully correspond with the probable results of such an anticipatory use of the metals."[1] The

[1] *Prehistoric Annals of Scotland*, 2d Ed. vol. i. p. 331.

idea thus formed from an examination of some of the most artless examples of primeval British goldsmiths' work, has been amply confirmed by observing the mode of using the native copper, and the traces of its former working, among the American Indians. Even now their highest attainment in metallurgic skill extends only to grinding the iron hoops with which the Hudson's Bay fur-traders supply them, into knives, arrow-heads, and the like substitutes for the older implements chipped out of flint, or ground from the broken stone. Further opportunities will occur for illustrating this subject; which is full of interest to the ethnologist, from the light it throws on the rate of progress of a barbarous people towards civilisation: or rather on the capacity of man in a certain undeveloped stage, for witnessing the most remarkable products of the useful arts, without evincing any desire to master them. To the historian, who has so frequently to consider, both in ancient and modern races, the immediate and remoter results of the contact of a highly civilized people with one in such a primitive condition, some of the bearings of this inquiry cannot be without their value.

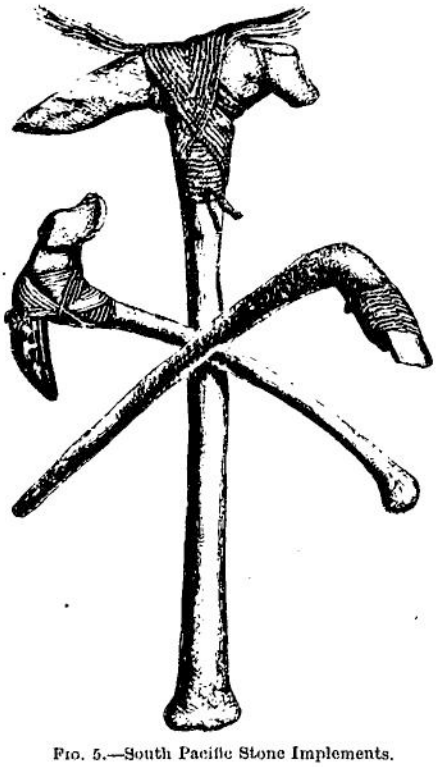


FIG. 5.—South Pacific Stone Implements.

After centuries devoted to the elucidation of Roman remains, and the assignment to Roman artificers of much which more discriminating classification now awards to totally different workmen: the discovery of weapons and implements of stone, shell, or bone, in nearly every quarter of the globe, has at length excited a lively interest among the archæologists of Europe. Made, as these primitive relics are, of the most readily wrought materials, and by what may be styled the constructive instincts, rather than the acquired skill

of their rude artificers, they belong to one condition of man, in relation to the progress of civilisation, though pertaining to many periods of the world's history, and the most widely-separated areas. In one respect, however, these relics possess a peculiar value to the ethnologist, when searching into the primeval condition of our race. The materials employed in such infantile processes of manufacture have within themselves, most frequently, the evidences of their geographical origin, and in some of them also of their chronological eras. The periods to which numerous European relics pertain, may frequently be determined, like those of inferior and older strata, by the accompanying imbedded or buried fossils. The bones of the *Bos primigenius* have been found indented with the primitive stone javelin of the aborigines of Northern Europe, and dug up alongside of the traces of British sepulture. Those of the *Megaceros Hibernicus* seem, in like manner, to be traced to a period of ancient Irish colonization, when stone hatchets and rude pottery prove the simple character of its native arts; while other evidence satisfies the palæontologist that the same Irish deer—thus seen, as it were, in its closing epoch, and immediately before its final extinction,—was contemporaneous with the mastodon, the mammoth, and the fossil carnivora of the caverns. The *Bos longifrons*, doubtless, traces its descent from an ancestry not less ancient; but from its wild herds the native Briton derived his domesticated cattle, and its most recent relics pertain to an era later than the Roman times. The ornamented tusks of the wild boar, the bones of the brown bear, the teeth and skulls of the beaver, the carvings wrought from the walrus ivory, the skates formed from the metatarsal and metacarpal bones of the red-deer and small native horse, with numerous kindred relics of palæontology within the era of the occupation of the British Islands by man, all serve to assign approximate dates to the examples of his ancient arts which they accompany.

Thus within the historic period, as in geological eras prior to the creation of man, the progress of time is recorded by the extinction of races. His advent was speedily marked by the disappearance of numerous groups of ancient life which pertain to that transitional era where geology closes and archæology begins; though the most recent discoveries of works of art along with the fossil mammals of the drift, confirm, by new and striking evidence, the fact that man entered on this terrestrial stage, not as the highest in an entirely new order of creation, and belonging to an epoch

detached by some overwhelming catastrophe from all preceding periods of organic life; but that, while the earth moved through its orbit in calm obedience to laws which still govern its course, he appeared as the last and best of an order of animated beings whose line sweeps back into the shadows of an unmeasured past. And as it was of old, so is it still:

> "The old order changeth, yielding place to new,
> And God fulfils himself in many ways,
> Lest one good custom should corrupt the world."

The disclosures of British tumuli and chance deposits strongly suggest the belief that the Celtic Briton was himself an intruder upon older allophylian occupants; while the intrusion of the Roman into Celtic Britain is recorded for us in the extinction of many of its ancient fauna, as well as of whole British tribes. What the Roman partially accomplished, the Saxon, the Dane, and the Norman completed: displacing the Celtic Briton everywhere but from the fastnesses of Wales, and gradually extirpating all but such animals as are either perfectly compatible with the free development of the highest social refinement, or are worthy of protection as a means of ministering to man's pleasures. And as it has been in the Old World, so is it in the New. The progress of the European colonists not only involves the extirpation alike of the wild animals and the forests which formed their natural haunts, but also the no less inevitable disappearance of the aborigines who made of them a prey; and thus the grave-mound of the Red Indian, and the relics of his simple arts, become the memorials of an extinct order of things no less clearly defined than the post-tertiary fossils of the drift.

But while the remains of extinct species thus serve, like the graven Roman or Runic inscription on the sepulchral slab, to determine the periods at which certain eras had their close; other accompanying objects, and chiefly the traces of living or extinct fauna, are no less valuable as fixing the geographical origin of the ancient colonists, amid whose relics they are found; just as the elephants, the camels, the monkeys, and baboons of the Nimrod obelisk, or the corresponding sculptures on the walls of Memphis or Luxor, indicate the countries whence tribute was brought, or captives were carried off, to aggrandize the Assyrian or Egyptian conquerors. Among such relics, which serve to fix the geographical centres of ancient arts, the sources of early commerce,

or the birthplaces of migrating races, might be noted the tin and amber of the Old, and the copper of the New World. So also in minuter analysis, we recognise among those of America, the local origin of various favourite materials: as the Mexican obsidian, the clay-slate of Columbia, the favourite red pipe-stone, or *Catlinite*, of the Couteau des prairies, and the pyrulæ and conch-shells of the Gulf of Florida, found mingling with relics of ancient tribes in the islands and on the north shores of the great Canadian lakes, along the southern slope of the same water-shed whence the Moose and the Abbitibbe pour their waters into the frozen sea of Hudson's Bay.

The designation of the primitive stage of industrial arts as a Stone-Period signifies, as has been already sufficiently indicated, that primeval condition in which, in the absence of metals, and the ignorance of the simplest rudiments of metallurgy, man has to find materials for the manufacture of his tools, and the supply of his mechanical requirements, in the commoner objects which nature places within his reach. The mere recognition of some convenient uses to which the malleable native metals could be applied as substitutes for stone, can scarcely be regarded as even an initial step in the transition towards the first true metallurgic period. This cannot be considered to have been introduced until the native copper-worker had perceived the wonderful transformations which could be wrought by fire, and had learned at least to melt the pure metal, and to mould the weapons and implements he required, if not to harden it with alloys, and to quarry and smelt the unfamiliar ores. But in the great archipelago of the Caribbean Sea, as well as in the widely-scattered islands of the Southern Pacific, the primeval stage of native art might more correctly be designated a shell-period; for the large shells which the mollusca of the neighbouring oceans produce in great abundance, supplied the native artificer with his most convenient and easily-wrought raw material; and in reality left him at no disadvantage as an artificer, when compared with the Indian of the copper regions on the shores of Lake Superior.

To the geologist the shells of the testaceous molluscs offer a department in palæontology of very wide application and peculiar value. They constitute, indeed, one of the most important among those records which the earth's crust discloses, whereby its geological history can be deciphered. But the special phases of interest which they possess for the ethnologist and archæologist

result from the evidence they furnish in illustration of the history of man and his arts. The mere beauty and variety of many marine shells sufficiently account for their selection as objects of personal adornment; while their large and solid structure, and the readiness with which their substance can be wrought into a variety of forms, must have suggested their employment in the earliest stages of insular art. Thus they became natural substitutes for the still unknown commoner metals; while, like the precious metals, shells have been used, both in the Old and New World, as primitive forms of a recognised currency. Of such the *Cypræa moneta* is the most familiar. The cowrie shells used as currency are procured on the coast of Congo, and in the Philippine and Maldive Islands. Of the latter, indeed, they constitute the chief article of export. At what remote date, or at what early stage of rudimentary civilisation this singular representative shell-currency was introduced, it is perhaps vain to inquire; but the extensive area over which it has long been recognised proves its great antiquity. The Philippine Islands form, in part, the eastern boundary of the Southern Pacific, and the Maldives lie off the Malabar coast in the Indian Ocean; but their shells circulate as currency not only through Southern Asia, but far into the African continent.

Corresponding to this cowrie-currency of Asia and Africa, is the American Ioqua, or *Dentalium*, a shell found chiefly at the entrance of the Straits of De Fuca, and employed both for ornament and money. The Chinooks and other Indians of the Northern Pacific Coast wear long strings of ioqua shells as necklaces and fringes to their robes. These have a value assigned to them increasing in proportion to their size, which varies from about an inch and a half to upwards of two inches in length. The author of *Wanderings of an Artist among the Indians of North America*, writes to me in reference to them: "A great trade is carried on among all the tribes in the neighbourhood of Vancouver's Island, through the medium of these shells. Forty shells of the standard size, extending a fathom's length, are equal in value to a beaver's skin, but if shells can be found so far in excess of the ordinary standard that thirty-nine are long enough to make the fathom, it is worth two beavers' skins; if thirty-eight, three beavers' skins, and so on: increasing in value one beaver skin for every shell less than the first number."

No evidence appears to indicate the use of the marine or fresh-

water shells of Europe as a species of currency; but it is interesting to notice that the mode of employing the spoils of the sea for personal decoration, by the rude Indians of the North-west, prevailed among the primitive occupants of Europe in that dim dawn of history revealed by the disclosures of their most ancient sepulchral deposits. The shell-necklace or bracelet lay unstrung amid the fossil bones of the post-pliocene catacomb at Aurignac; and among the personal ornaments found in early British graves, seemingly pertaining to a period long prior to the acquisition of the simplest metallurgic arts, are necklaces formed of small shells abounding on the neighbouring coasts, such as the *Nerita littoralis*, the *Patella vulgata*, and others equally common at the present day.

A peculiarly interesting illustration of the use of shells for personal decoration, during the primitive stone-period, is furnished by a discovery made in the year 1838. During the progress of improvements in the Phœnix Park, Dublin, an elevated knoll, one hundred and twenty feet in diameter, and fifteen feet in height, known by the name of Knock-Maraidhe, or the Hill of the Mariners, was levelled; when it was discovered to be an artificial sepulchral mound, concealing a megalithic tomb, composed of massive unhewn stones. Within this sepulchral chamber were found two male skeletons, with traces of other bones, including one supposed to be that of a dog. The bodies had been interred in the contracted position common in early British sepulture; and immediately under each skull lay a quantity of the common *Nerita littoralis*. These shells had been rubbed down on the valve, so as to make a second hole, for the purpose of being strung together to form necklaces; and remains of vegetable fibre were discovered, a portion of which was through the shells. Alongside of these, also, lay a knife or arrow-head of flint, and a double-headed pin, neatly formed of bone, but no traces of metal. In the outer verge of the tumulus, were four stone cists, each containing a small vase, and calcined bones. The sepulchre in all probability contained the bodies of two distinguished chiefs, to whom were accorded the most costly funeral honours of primitive times. But the surrounding urns with their incinerated remains, and possibly also one of the skeletons in the megalithic chamber, point to the practice of human sacrifice, when the subordinate companion-in-arms, the wives and slaves, perished beside the bier of the great warrior, that they might pass with him to the world of spirits, there to renew the same offices they had performed on earth.

Such examples of primitive sepulture have repeatedly disclosed the barbarian ideas of honouring the illustrious dead. Manifestly neither labour nor cost was spared. The megalithic chamber was reared, the ornamental cinerary urns were prepared, the bodies of the attendant victims were consumed on the pile, and their ashes deposited with the urns in the surrounding cists; and then the earthen pyramid was laboriously piled over the whole, and the costly structure hidden for ages from the light of day. The weapons, implements, and ornaments of such tombs all combine to show that it was an absolute stone-period, without even the first transitional traces of metallurgic arts; and this idea, which I was led to form from the investigation of primitive British graves, has been strongly confirmed by the proofs of lavish expenditure of the American Indians on their sepulchral depositories. In the Huron grave-mounds of the Georgian Bay lie tropical shells of the Gulf of Florida, the carved pipe-head, the stone hatchet and flint arrow-head; and along with these the copper kettle, the iron knife, and other metallic treasures acquired from the old French traders. So also the canoe-biers of the Chinook and Cowlitz Indians on the Columbia and Cowlitz rivers, contain not only the native bow and arrows, spear, paddle, and personal ornaments, but the iron tomahawk, copper kettle, gun, and others of the most prized objects acquired from the Hudson's Bay factors.

Some of the customs of the Indians of the Columbia river illustrate the ideas relative to a future life in which such offerings to the dead have had their origin from the remotest times. The Chinooks are among the most remarkable of the flat-head Indians, and carry the strange process of cranial distortion to a great extent. They are in some respects a superior race, making slaves of other tribes, and evincing considerable skill in such arts as are required in their wild forest and coast life. Their chief war-implements are bows and arrows, the former made from the yew-tree, and the latter feathered, and pointed with bone. Their canoes, hollowed out of the trunk of the cedar-tree, which attains to a great size in that region, are frequently very large, and ornamented with much taste and skill. In such a canoe the dead Chinook chief is deposited, surrounded with all the requisites for war, or the favourite occupations of life: presenting a correspondence in his sepulchral rites to the ancient pagan viking, who, as appears alike from the contents of the Scandinavian *Skibssætninger*, and from the narratives of the Sagas, was interred or consumed in his war-galley,

and the form of that favourite scene of his ocean triumphs perpetuated in the earth-work that covered his ashes. Tin cups, copper kettles, plates, pieces of cotton, red cloth, and furs, and in fact everything which the Chinooks themselves most value, or which are most difficult to obtain, are hung round the canoe. Beside the body they place paddles, weapons, food, and whatever else is considered necessary for a long journey. Beads, ioqua shells, and small coins are even placed in the mouth of the dead. The funeral cortege of mourners in their canoes has an imposing character. The deceased, carefully disposed in his canoe-bier, and surrounded by the articles intended for his use in the life beyond the grave, is towed to the island cemetery of the tribe, and there the canoe is either fastened to the branches of a tree, or raised on a scaffolding of cedar boards and poles, four or five feet from the ground. The final act is to bore holes in the canoe; and in like manner, to mutilate and render useless the various offerings to the dead. The belief is, that while their use on earth is thereby at at an end, the Great Spirit will restore them to perfection on the arrival of the deceased at the elysian hunting-grounds. Among the greatest crimes which an Indian can commit is the desecration of one of those canoe-biers; and its perpetration, if discovered, is certain to be visited by death. Instances of such sacrilege are accordingly of rare occurrence; but one happened a few years since, to which attention was directed by the spoiler being shot dead within the precincts of Fort Vancouver, by order of Casenov, the chief of the Chinook Indians.

The favourite son of this chief died, and, contrary to the wonted custom of his tribe, he had him buried in the cemetery attached to Fort Vancouver. The proceedings of the bereaved chief presented a singular admixture of Christian sepulture with the ineradicable superstitions of the wild Indian. The coffin was made sufficiently large to contain all the necessaries supposed to be required for his comfort and convenience in the world of spirits. The chaplain of the Fort read the usual service at the grave, and after the conclusion of the ceremony, Casenov returned to his lodge, and the same evening attempted the life of his boy's mother, a daughter of the great one-eyed chief, King Comcomly, alluded to in Washington Irving's *Astoria*. The unfortunate mother had devotedly nursed her son during his sickness, and was moreover the favourite wife of the Chinook chief. But this only furnished additional motives for her destruction. Casenov stated to Mr. Kane, that as

he knew his wife had been so useful to her son, and so necessary to his happiness and comfort in this world, he wished to send her with him as his companion on his long journey. The reason thus assigned for the murder of his favourite wife over the grave of their son, gives a curious insight into the motives of such barbarous sacrificial rites in all ages: exhibiting as it does so strange a mixture of good and evil.

Similar sacrifices constituted part of the last funeral rites in Europe's prehistoric times, as is proved by some of the most ancient sepulchral disclosures. The extent of the privation added to the fitness of the gift. The most prized weapons, implements, and personal ornaments; the dog, the horse, the slave, and the wife: were all lavished on the honoured dead. Nothing was spared that reverence or superstition could suggest to supply the wants of a future life. The discovery, therefore, of the stone celt or hammer, the flint knife, and the shell bracelet or necklace, unaccompanied by any implements of copper or bronze, in such laboriously constructed catacombs as that of the Knock-Maraidhe tumulus, is conclusive proof that they are the sepulchres of a people who had not yet acquired any knowledge of metals; and the illustrations of the motives for such sacrifices which the study of modern savage life supplies, gives fresh significance to the contents of the ancient British cromlech or barrow, or those even of the post-pliocene catacomb of Aurignac in the Pyrenees. We discern in them glimpses of the ideas of a future state in the remotest eras to which such sepulchral memorials belong; and discover in the ancient and modern record the same child-like confusion of ideas, still traceable in many rustic superstitions, which betray the difficulty of conceiving of the disembodied spirit, or of a spirit-world distinct from the grave.

Looking at the subject, however, from another point of view, we perceive that the Indians, who originally possessed only weapons, implements, and personal ornaments of bone, shell, flint, and stone, or at most of native copper, rudely hammered into shape: are seen after an interval of upwards of three centuries of European colonization and traffic, without the slightest acquired knowledge of working in metals; but possessed of numerous metal implements and weapons, which, as their greatest treasures, they freely lavish on the loved or honoured dead. Such traces of metallurgy, it is manifest, afford no proof of acquired native art. The copper kettle of the Chinook coffin-bier on the Columbia

river, was brought, not from the copper regions of Lake Superior, but from London or Liverpool, along with the beads, knives, hatchets, and other objects of barter, by means of which the fur-traders carry on their traffic with the Indian hunter. At most it only proves that a nation, still in its stone-period, and possessing no greater skill than is required to grind an iron hoop into lance or arrow heads, has been brought into contact with a civilized people, familiar with metallurgy and many acquired arts, such as the musket and the rifle may most aptly symbolize.

The same diversity of inventive power and artistic skill is discernible among the Indian tribes of North America, as has been already referred to in comparing the arts of other uncivilized races. In some constructive skill predominates, while others manifest a peculiar aptitude for imitative arts. The powers of imitation common to the barbarous and the civilized nations of the New World, are specially worthy of note, and will come under review when referring to the pipe manufacture, so curiously typical of American art. But meanwhile an equally instructive illustration of what may thus be designated æsthetic and constructive instincts may be selected from the diversely gifted islanders of the Southern Pacific. On the extreme western verge of the Polynesian archipelago lie the Feejee Islands, occupied by a people remarkable among the islanders of the Pacific alike for physical and intellectual peculiarities. The Feejeean physiognomy is described as presenting general characteristics of debasement, when compared with that of the true Polynesian, and the entire proportions and contour of his figure are markedly inferior to those of the Friendly and Navigator islanders. This is the more remarkable in a people dwelling in the midst of abundance, and enjoying an unusual variety of choice articles of food. Their ferocious and treacherous habits, however, and the hideous customs of cannibalism and systematic parricide, with attendant crimes inevitable in such a social condition, render the Feejeean Islands, which seem fitted by nature to be the abodes of happiness, among the most wretched scenes of moral degradation. Nevertheless it is in this strange island-group that the arts of the South Pacific have their highest development.

The Negrillos appear to be the true inventive race, from whom the Feejeeans, who are unquestionably allied to them in blood, acquired, elaborated, and greatly improved many applications of art and skill. But the ingenious Negrillo is altogether unsocial

and prone to isolation, and the Feejeeans manifest an equally strong disinclination to leave their island-home. It required, therefore, the intervention of a migratory or aggressive race to diffuse their acquired knowledge and skill; and this is supplied by the Malayans, who are found in contact with many widely-scattered nations, and are of a roving disposition, the proper children of the sea. "Naturally," says Dr. Pickering, "the most amiable of mankind, they are free from antipathies of race, are fond of novelty, inclined rather to follow than to lead, and in every respect seem qualified to become a medium of communication between the different branches of the human family." Such a race of plastic, amphibious mediators being found, a curious light is thrown on the diffusion of knowledge and the primitive arts throughout the widely-scattered island groups of the Southern Pacific, where almost every Polynesian art, it is said, can be distinctly traced to the Feejee Islands, while the Feejeean himself is so averse to roam. The best and the worst characteristics of the Feejee islanders are strangely intermingled. They use the bow and throw the javelin with great dexterity; but their peculiar and distinguishing weapon is a short missile club, which all habitually wear stuck in the belt, the symbolic Feejeean tool and national instrument of assassination. Many analogies of history tend, however, to confute the error of assuming the occurrence of moral degradation, even when manifested in parricide, cannibalism, and systematic treachery and assassination, to be necessarily incompatible with such intellectual development as distinguishes the Feejeeans from other islanders of the Pacific. Of all the aborigines of the Pacific, the ferocious New Zealander has proved most capable of civilisation; and is found moreover to possess a traditional poetry and mythical legends of a highly striking and peculiar character. And turning from still undeveloped races of the world, we have only to study deeds perpetrated by the pagan Saxon, the Hun, or the later Dane and Norseman, to see in what hideous aspects the energies of a rude people may be manifested, who are nevertheless capable of becoming leaders in the civilisation of Europe. To judge by the monkish chronicles, no Feejee cannibal could surpass, either in savage atrocity or in hideousness of aspect, the Hungarian or Northman from whom the proudest of Europe's nobles claim descent. The chroniclers of Germany, France, and Italy, describe the savage fury of the former with dolorous brevity; and the liturgy of the Gallican Church of the

ninth century preserves the memorial of the pagan Northmen's ravages in the supplication added to its litany: *A furore Normannorum libera nos.*

It is obvious therefore that the savage vices of the Feejeeans are perfectly compatible with considerable skill in such arts as pertain to their primitive and insular condition. Their musical instruments are superior to those of the Polynesians, and include the Pan-pipe and others unknown in the islands beyond their range. Their pottery also exhibits great variety of form, and includes examples of vessels combined in groups, presenting a curious correspondence to similar productions of Peruvian art. Their fishing-nets and lines are remarkable for neat and skilful workmanship, and they carry cultivation to a considerable extent. "Indeed," remarks the ethnologist of the United States Expedition, in summing up the characteristics of the Feejeeans, "we soon began to perceive that the people were in possession of almost every art known to the Polynesians, and of many others besides. The highly-finished workmanship was unexpected, everything being executed until recently, and even now for the most part, without the use of iron. In the collection of implements and manufactures brought home by the Expedition, the observer will distinguish in the Feejeean division something like a school of arts for the other Pacific islands." In such a strangely-gifted savage race we see at once the degradation of which human nature is susceptible, and yet at the same time germs of a constructive and artistic capacity capable of development into many marvellous manifestations, if once subjected to such elevating influences as changed the merciless pirate of the northern seas into the refined Norman, the chivalrous crusader, and the imaginative troubadour.

The extensive archipelago interposed between the Society and Gambier Islands and the Marquesas, consists exclusively of coral islands. There the native arts are mostly of an inferior character; though their small and slight canoes are propelled with great rapidity by means of a paddle ingeniously formed with a curved blade. But all ideas of rudeness in their arts give way to wonder and admiration on discovering the limited materials at the command of the workmen. The cocoa-palm furnishes supplies for matting and weaving, and the cassytha stems and cocoa-nut fibre are plaited into ropes. The finer cord is made of human hair; and bones of the turtle and the larger kinds of fish supply the only material for fish-hooks and spears. There is no natural production

on the islands harder than shell or coral; and from these accordingly the native tools are made. Here, therefore, we see what reason is capable of achieving in the development of ingenious arts, amid a privation of all that seems indispensable to the first efforts at constructive skill. Compared with such inadequate means, the flint, stone, horn, and bone of Europe's stone-period seem little less ample, than the contrast of her later metallurgic riches with the resources of that primitive era.

Though the natives of the Antilles possessed some natural advantages over the inhabitants of the volcanic and coral islands of the Pacific; yet when first visited by the Spaniards, the large marine shells with which the neighbouring seas abound, constituted an important source for the raw material of their implements and manufactures. The great size, and the facility of workmanship of the widely-diffused *pyrulæ*, *turbinella*, *strombi*, and other shells, have indeed led to their application, wherever they abound among uncivilized nations, to numerous purposes elsewhere supplied from other sources. Of such, the Caribs made knives, lances, and harpoons, as well as personal ornaments; while the mollusc itself was

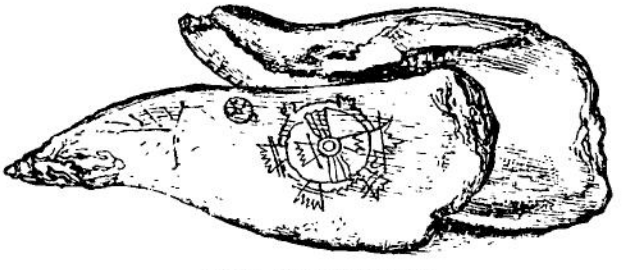


FIG. 6.—Carib Shell-Knives.

sought for and prized as food. In Barbadoes the *Strombus gigas* still furnishes a favourite repast; and numerous ancient weapons and implements made from its shell have been dug up on the island. The accompanying illustrations are selected from a collection, illustrative of the primitive manufactures of the Antilles, presented to me by Dr. Bovell. They were dug up with other relics, in the island of Barbadoes, where traces of the aboriginal Carib blood continued till very recently to mark a portion of the coloured population.

The Carib aborigines of the Antilles furnish a striking example of what the more active manifestations of moral degradation really imply. Compared with the gentle, passive Indians met by the

Spaniards on the first islands visited by European explorers, the Caribs were a cruel and fierce race of cannibals, as hateful in all their most salient characteristics as the New Zealanders or Feejeeans. Yet time has proved, even under very unfavourable circumstances, that the fierceness and aggressive cruelty of the Caribs of the Lesser Antilles corresponded to the wild fury of the old viking rovers of Europe, and gave proof of energy and stamina capable of sturdy endurance; while the gentle and friendly Indians of the larger Antilles, without, in reality, any superior moral attributes, but only the characteristics of a weak and passive nature, have melted away like the snows of former winters, with scarcely a memorial of their existence left. The Caribs are the historic race of the Antilles. Their chronicles derive vitality and endurance, like those of ancient Europe, from the vicissitudes of war. These show them as restless aggressors; and though long since expelled from their ancient insular possessions, they still appear on the southern mainland as the people of an encroaching area; and the marches of their extending frontier ring with the shouts of border warfare, as fierce and to us not greatly less substantial than the Wendish and Bulgarian warrings of Henry the Fowler, and his German Markgräfs of well-nigh a thousand years ago.

In 1851, Sir Robert Schomburgk communicated to the British Association the result of recent ethnological researches in St. Domingo. In this the observant traveller deplores the fact that of the millions of natives who at its discovery peopled the island, not a single pure descendant now exists, though he could trace in the Indios of mixed blood the peculiar features and other physical characteristics of the pure Indian still uneradicated. In the absence of a true native population, Sir Robert Schomburgk remarks: "My researches were restricted to what history and the few and poor monuments have transmitted to us of their customs and manners. Their language lives only in the names of places, trees, and fruits, but all combine in declaring that the people who bestowed these names were identical with the Carib and Arawaak tribes of Guiana. An excursion to the calcareous caverns of Pommier, about ten leagues to the west of the city of Santo Domingo, afforded me the examination of some picture-writings executed by the Indians after the arrival of the Spaniards. These remarkable caves, which are in themselves of high interest, are situated within the district over which, at the landing of the Spaniards, the fair Indian Catalina reigned as cacique." To this district they were tempted by

the news of rich mines in its mountains. In 1496, a fortified tower was erected, called originally San Aristobal; but so abundant was the precious metal, that even the stones of the fortress contained it, and the workmen named it the Golden Tower. But the lives of millions of the miserable natives were sacrificed in recovering the gold from their mountain veins; and then, the mines being exhausted, the country was abandoned to the wild exuberance of tropical desolation, while the caverns which had previously been devoted to religious rites, became places of retreat from the Spaniard and his frightful bloodhounds. One of the smaller caves still exhibits a highly interesting series of symbolic pictures, which the Indians had traced on its white and smooth walls. Near the entrance of a second cave, Sir R. Schomburgk discovered decorations of a more enduring character carved on the rock, and of these he remarks: "They belong to a remoter period, and prove much more skill and patience than the simple figures painted with charcoal on the walls of the cave near Pommier. The figures carved of stone, and worked without iron tools, denote, if not civilisation, a quick conception and an inexhaustible patience, to give to these hard substances the desired forms." From his examination of the tools and utensils still in use in Guiana, Sir Robert doubts such to be the work of the Caribs; but he admits that they are only found where we have sure evidence of their presence; and he underestimates both the skill and patience shown by many native artists equally poorly provided with tools.

Other relics of native art and history attracted the attention of the traveller, and he specially dwells with interest on a paved ring of granite, upwards of 2200 feet in circumference, with a human figure rudely fashioned in granite occupying the centre. It stands in the vicinity of San Juan de Maguana, in St. Domingo, which formed, at the time of its first discovery, a distinct kingdom, governed by the cacique Caonabo, the most fierce and powerful of the Carib chiefs, and an irreconcilable enemy of the European invaders. It is called at the present day, "El Çercado de los Indios," but Sir Robert Schomburgk questions its being the work of the inhabitants of the island when first visited by the Spaniards, and assigns it, along with figures which he examined cut into rocks in the interior of Guiana, and the sculptured figures of St. Domingo, to a people far superior in intellect to those Columbus met with in Hispaniola. These he conceives to have come from the northern part of Mexico, adjacent to the ancient district of Huastecas, and

to have been conquered and extirpated by their Carib supplanters, prior to European colonists displacing them in their turn.

Among numerous stone weapons or implements which have been discovered, and that serve to illustrate the primitive arts of the New World, three remarkable relics from the Bay of Honduras, in South America, are deserving of special attention. They were found, about the year 1794, with other examples, in a cave between two and three miles inland. One was presented to the British Museum, and two others have been repeatedly exhibited at meetings of the Archæological Institute. The accompanying

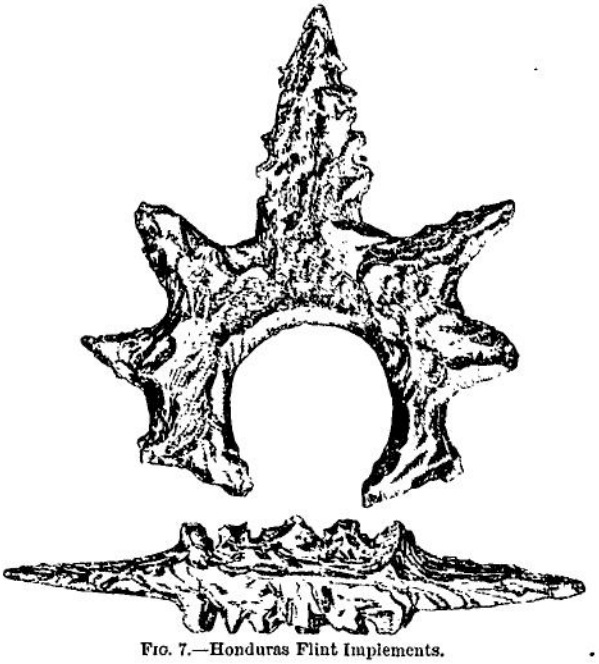


FIG. 7.—Honduras Flint Implements.

woodcuts will best convey an idea of their peculiar forms. One is a serrated weapon, pointed at both ends, and measuring sixteen and a half inches long. Another, in the form of a crescent, with projecting points, measuring seventeen inches in greatest length, may have served as a weapon of parade, like the state partisan or halbert of later times. The third, which is imperfect, is shown in Fig. 8. The whole are examples of flint implements, of unusually large proportions, and chipped with extraordinary regularity and skill. A well-executed specimen of terra cotta (Fig. 64), obtained about the same period, if not indeed along with these implements,

was presented to the Society of Antiquaries of Scotland in 1798, and is figured on a subsequent page.

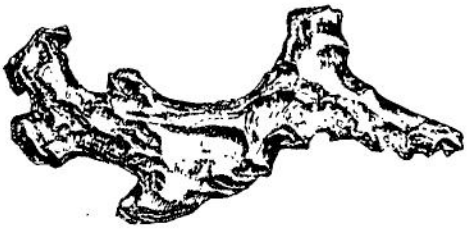


FIG. 8.—Honduras Implement.

The island of Jamaica has furnished numerous examples of the stone and flint weapons and implements of its ancient inhabitants; and in many of the other islands relics of the ingenious conversion of the shells of the Caribbean Sea, to purposes of manufacture, have been found. But while noting the varied uses to which marine shells were applied by the natives of the Archipelago, a greater interest attaches to the indications of an ancient trade in these products of the Gulf of Florida, carried on among widely-scattered tribes of North America, long before its discovery by Columbus.

Abundant evidence proves that the large marine shells were regarded with superstitious reverence, both by the more civilized nations of the land around the Gulf, and by tribes even so far north as beyond the shores of the great Canadian Lakes. In one of the singular migratory scenes of the ancient Mexican paintings, copied from the Mendoza Collection,[1] in the Bodleian Library at Oxford, a native, barefooted, and dressed in a short spotted tunic, reaching to his loins, bears in his right hand a spear, toothed round the blade, it may be presumed with points of obsidian, and in his left hand a large univalve shell. A river, which he is passing, is indicated by a greenish stripe winding obliquely across the drawing, and his track, as shown by alternate footprints, has previously crossed the same stream. On this trail he is followed by other figures nearly similarly dressed, but sandalled, and bearing spears and large fans; while a second group approaches the river by a different trail, and in an opposite direction to the shell-bearer. Other details of this curious fragment of pictorial history are less easily interpreted. An altar, or a temple, appears to be represented on one side of the stream; and a highly coloured circular figure on the other, may be the epitomized symbol of some Achæan land or Sacred Elis of the New World. But whatever be

[1] Lord Kingsborough's *Mexican Antiquities*, vol. i. plate 68.

the interpretation of the ancient hieroglyphic painting, its general correspondence with other migratory depictions is undoubted; and it is worthy of note, that, in some respects, the most prominent of all the figures is the one represented fording the stream, and bearing a large tropical univalve in his hand.

The evidence thus afforded of an importance attached to the large sea-shells of the Gulf of Mexico, among the most civilized of the American nations settled on its shores, deserves notice in connexion with the discovery of the same marine products among relics pertaining to Indian tribes upwards of three thousand miles distant from the native habitat of the mollusca, and separated by hundreds of miles from the nearest sea-coast.

Tracing them along the northern route through the Mississippi and Ohio valleys, these shells have been found in the ancient graves of Tennessee, Kentucky, and Indiana, and northward to the regions of the Great Lakes. Dr. Gerard Troost, in a communication to the American Ethnological Society,[1] describes an interesting series of sepulchral remains discovered in Tennessee. The crania were characterized by remarkable artificial compression, as in an example figured by Dr. Morton (plate 55, *Crania Americana*), and the graves abounded with relics, "lares, trinkets, and utensils, all of a very rude construction, and all formed of some natural product, none of metal." From an examination of these, Dr. Troost was led to the conclusion that the race to whom they pertained came from some tropical country. Among their stone implements obsidian abounded. Numerous beads were formed of tropical marine shells of the genus *marginella*, ground so as to make a perforation on the back, by means of which they could be strung together for the purposes of personal ornament. Plain beads were made from the columellæ of the *Strombus gigas;* and such columellæ were found worn to a uniform thickness, perforated through the centre, and in all stages of manufacture, to that of perfected beads and links of the much-prized *wampum*. Similar accumulations of shell-beads in the great mounds of the Ohio valley, are referred to in a subsequent chapter; but another relic has an additional value from the light it throws not only on early native arts, but on ancient manners and modes of thought. Dr. Troost describes and figures various rudely sculptured idols, from some of which he was led to assume the existence of Phallic rites among the ancient idolaters of Tennessee. The greater number of the idols were of stone, but the one figured here has been

[1] *Transactions, American Ethnological Society*, vol. i. pp. 355-365.

modelled of clay and pounded shells, and hardened in the fire. It represents a nude human figure, kneeling, with the hands clasped in front; and when found, it still occupied, as its primitive niche or sanctuary, a large tropical shell (*Cassis flammea*), from which the interior whorls and columella had been removed, with the exception of a small portion at the base, cut off flat, so as to form its pedestal. The special application of this example of the tropical cassides adds a peculiar interest to it, as manifestly associated with the religious rites of the ancient race by whom the spoils of southern seas were transported inland, and converted to purposes of ornament and use.

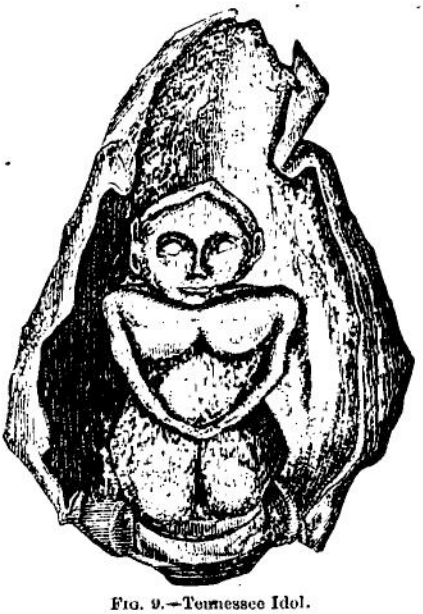


FIG. 9.—Tennessee Idol.

The discovery of similar tropical relics to the north of the Great Lakes, is still more calculated to excite surprise; and, indeed, when first brought under notice gave rise to extravagant ethnological theories, based on the assumption of their East Indian origin.[1] But though they furnished no evidence of such far wanderings from the old East, they throw considerable light on ancient migrations of native American races, and illustrate the extent of traffic carried on between the north and south, in ages prior to the displacement of the red man by the European. Two large tropical shells, both specimens of the *Pyrula perversa*, have been presented to the Canadian Institute at Toronto: not as examples of the native conchology of the tropics, but as Indian relics pertaining to the great northern chain of fresh-water lakes. The first was discovered on opening a grave-mound at Nottawasaga, on the Georgian Bay, along with a gorget made from the same kind of shell; the second was brought from the Fishing Islands, near Cape Hurd, on Lake Huron. Another example, from the Georgian Bay, is in the Museum of the University of Toronto; and many specimens have come under my notice procured from grave-mounds and sepulchral depositories on the shores of the same bay. In one pit, about seven

[1] *Inquiry into the Origin of the Antiquities of America*, p. 162.

miles from Penetanguishene, three large conch-shells were found, along with twenty-six copper kettles, a pipe, a copper bracelet, a quantity of shell beads, and numerous other relics. The largest of the shells, a specimen of the *Pyrula spirata*, weighed three pounds and a quarter, and measured fourteen inches in length; but a piece had been cut off this, as well as another of the large shells, probably for the manufacture of some smaller ornament. In another cemetery in the same district, among copper arrow-heads, bracelets, and ear-ornaments, pipes of stone and clay, beads of porcelain, red pipe-stone, etc., sixteen of the same prized tropical univalves lay round the bottom of the pit arranged in groups of three or four together. From the columellæ of such shells the sacred wampum, official gorgets, and other special decorations were made; and the appearance of some of those found in northern graves suggests that they may have been handed down through successive generations as great medicines, before their final deposition, with other rare and costly offerings, in honour of the dead.

The attractions offered by such large products of tropical seas are by no means limited to the untutored tastes of the American Indian, nor to fauna of the Mexican coasts. In India, China, and Siam, the *Pyrum*, and other large and beautiful shells of the Indian Ocean, are no less highly prized by the natives, not only as the source from which to procure an easily wrought material for implements and personal ornaments; but in some cases, as vessels employed in their most sacred rites. A sinistrorsal variety found on the coasts of Tranquebar and Ceylon, is devoted by the Cingalese exclusively to such purposes. Reversed shells of the species *Turbinella*, are held in like veneration in China, where great prices are given for them; and are often curiously ornamented with elaborate carvings, as shown on several fine specimens in the British Museum. They are kept in the pagodas, and are not only employed by the priests on special occasions in administering medicine to the sick; but the vessel for holding the consecrated oil, with which the Emperor is anointed at his coronation, is made from one of them.

Such analogies in the choice of materials for implements and personal ornaments, and in objects set apart for the sacred rites of different nations, are full of interest in reference to characteristics common to man in all ages, and in regions the most remote. But when they are met with in the arts and customs of the same continent, they point with greater probability to borrowed usages, and often help the ethnologist to track the footprints of migrating

nations to their earlier homes. The traditions of the Aztecs at the time of the Mexican conquest, pointed to their origin from among the warlike and migratory northern tribes; and among these the nations of the Iroquois confederacy, though scarcely rising above the hunter stage, offer a subject of study of peculiar value in reference to the ethnology of the New World. In the great valley of the St. Lawrence, at the period of earliest European contact with its native tribes, we find this confederacy of Indian nations in the most primitive condition as to all knowledge of progressive arts; but full of energy, vitality, and military enterprise, and amply endued with the qualities requisite for effecting permanent conquests over a civilized but unwarlike people. Nor did the primitive arts of the Iroquois prevent the development of incipient germs of civilisation among them. Agriculture was practised systematically, and to a considerable extent; and their famous league, wisely established, and maintained unbroken through very diversified periods of their history, exhibits to us a people advancing in many ways towards the initiation of a self-originated civilisation, when the intrusion of Europeans abruptly arrested its progress, and brought them in contact with elements of foreign progress pregnant only with the sources of their degradation and final destruction.

The historian of the Iroquois,[1] when describing their simple arts and manufactures, remarks, that in the western mounds rows of arrow-heads or flint-blades have been found lying side by side, like teeth, the row being about two feet long. "This has suggested the idea that they were set in a frame, and fastened with thongs, thus making a species of sword." In this description we cannot fail to recognise the *mahguahuitl*, or native sword of Mexico and Yucatan. In the large canoe with its armed crew, first met off the latter coast, Herrera tells us the Indians had "swords made of wood, having a gutter in the forepart, in which were sharp-edged flints strongly fixed with a sort of bitumen and thread." Among the Mexicans this toothed blade was armed with the *itzli*, or obsidian, capable of taking an edge like a razor; and the destructive powers of this formidable weapon are frequently dwelt upon by the early Spaniards. Among the ruins of Kabah, in Yucatan, the attention of Stephens was attracted by the protruding corner of a sculptured plume of feathers, which led to his laboriously excavating a large sculptured slab, the basso-relievos on

[1] Lewis H. Morgan: *League of the Ho-dé-no-sau-nee, or Iroquois.*

which consist of an upright figure having a lofty plume of feathers falling to his heels, while another figure kneels before him holding in his hands the very same weapon, with its flint or obsidian blades projecting from the wooden socket. The idea it suggests is not necessarily that assumed by Stephens: that the sculptors and architects of the great ruins of Central America and Yucatan were the same people whom the Spaniards found there on their landing. The sculptured slab may be of a greatly older date. On its lower compartment is a row of hieroglyphics; and the suppliant attitude of the armed figure is rather suggestive of a record of conquest over some barbarian chief of Mexican or more northern tribes, of whom the flint-edged sword-blade was the most typical characteristic. Nevertheless, there is a singular interest in the simple chain of evidence, thus confirmatory of the Aztec traditions of original migration, and the subjugation of the elder civilized race of Anahuac by northern warriors: which leads us, step by step, from such rude arts as those of the Iroquois, and relics of other barbarous tribes in the western sepulchral mounds, to the Mexican armature of the era of the conquest, and artistic records of the lettered architects of Yucatan.

The history of the Iroquois and their simple arts, illustrates with peculiar aptness the unwritten chronicles of the New World. In their rude state they achieved a remarkable civil and military organization, and acquired more extensive and enduring influence than any nation of native American lineage, excepting the civilized Mexicans and Peruvians. Their own traditions pointed to a remote era, when they migrated from the northern shores of the St. Lawrence into that region to the south and east of Lake Ontario, where they dwelt through all the period of their authentic history; though two members of the league, the Senecas and Onondagas, claimed to be autochthones, sprung from the soil of that Iroquois territory. The league embraced the Oneidas, Onondagas, Cayugas, Senecas, and Mohawks, all united in a strictly federal union; and to this the Tuscaroras were admitted, on their expulsion from North Carolina in 1715. The claim of a common origin advanced by a people occupying territory so far to the south, throws an interesting light on the migrations of Indian tribes. It is confirmed by the character of their language, and received practical recognition in the assignment of a portion of the Oneida territory for their occupation. In the seventeenth century the Iroquois were the great aggressive nationality of the continent, to the north of Mexico. In the very

beginning of that century, Captain John Smith, the founder of Virginia, encountered their canoes on the upper part of the Chesapeake Bay, bearing a band of them to the territories of the Powhattan confederacy. The Shawnees, Susquehannocks, Nanticokes, Miamis, Delawares, and Minsi, were, one after another, reduced by them to the condition of dependent tribes. Even the Canarse or Long-Island Indians found no protection from them in their sea-girt home beyond the Hudson; and their power was felt from the St. Lawrence to Tennessee, and from the Atlantic to the Mississippi.

How long before the discovery of this vast region by Europeans, it had been in occupation by those who claimed to be its autochthones, we have no other knowledge than their own traditions of migration. But so far as arts are any evidence of national progress, they were then in their infancy. The region they occupied offered no advantages for the inauguration of a copper or bronze era, such as those of Lake Superior or the Southern Andes supplied to their ancient possessors. Of working in metals they knew nothing; and only supplemented their primitive implements, wrought in stone, flint, horn, bone, and wood, by barter with the European intruders. Nevertheless, for nearly two centuries, the Indians of the Five Nations, as they were called before the addition of the Tuscaroras, presented a sturdy and unbroken front to European encroachment, alike by Dutch, French, and British colonists. But their uncompromising hostility was concentrated in opposition to the French nation; and as the rival colonies of France and England were long nearly balanced, it is not unjustly affirmed by the historian of the Iroquois, that to their league France chiefly owes the final overthrow of her magnificent schemes of colonization in North America.

Such are some of the glimpses which the history of the New World thus affords us, of what man is capable of achieving through long centuries, independent of all the arts and appliances of civilisation, which to us seem almost indispensable to existence. But whatever time might have developed out of the Iroquois confederacy, akin to the native civilisation which had already taken root beyond the verge of their southern conquests, they had little to hope from the triumph of either of the European aggressors between whom they so long held the balance. The insular European race proved the victors; and when at a later date England and her American colonies came into collision, the nations of the

League took different sides, and the Hodenosaunee[1] finally ceased to be the ideal rallying-point of a united people. They had run their destined course; and now the poor scattered remnants of the once-famous Indian federation, serve only to illustrate how irreconcilable are the elements of high civilisation with the most vigorous and progressive energy of a people only maturing the first stage in the progress of nations. Stone, bronze, and iron periods, are not indispensable steps in the advancement of the human race; but all experience proves that when such extreme social conditions are abruptly brought into contact as Stone and Iron Periods aptly symbolize, the tendency is towards the degradation and final extinction of the less advanced race. It is a law of wide application. The serf of Poland and Russia is now in the condition of the Saxon unfree long prior to the Conquest. It may well be doubted if it either ameliorates his present condition, or accelerates his healthful progress, that he has to work out his elevation alongside of the advanced nationalities of Europe's nineteenth century. France, amid all her æsthetic civilisation, is, in point of political progress, scarcely in advance of the England of the seventeenth century; and more than one false step in her past history is traceable to her effort to assume the greater maturity of England without passing through the preliminary training. But whatever truth there may be in such applications of the law which seems to control the influence of races thus brought into close relation in diverse stages of progress: the evidences are manifold which prove that the most powerful savage nations perish hopelessly when forced into contact with the elements of a highly-matured civilisation.

[1] *Ho-dé-no-sau-nee*, or People of the Long House, expressive of the numerous assembly in the Council of the Confederacy.

CHAPTER VIII.

THE METALS.

DAWN OF A METALLURGIC ERA—PRIMITIVE COPPER-WORKING—THE COPPER REGION OF LAKE SUPERIOR—THE PICTURED ROCKS—LE GRAND PORTAIL—JACKSON IRON MOUNTAIN—THE CLIFF MINE—COPPER TOOLS—ANCIENT MINING TRENCHES—GREAT EXTENT OF THE WORKS—MINES OF ISLE ROYALE—THEIR ESTIMATED AGE—ANCIENT MINING IMPLEMENTS—STONE MAULS AND AXES—ONTONAGON MINING RELICS—SITES OF COPPER MANUFACTORIES—LOST METALLURGIC ARTS—BROCKVILLE COPPER IMPLEMENTS—CHEMICAL ANALYSES—NATIVE TERRA-COTTAS—ANCIENT BRITISH MINING-TOOLS—THE RACE OF THE COPPER MINES—CHIPPEWA TRADITIONS—EARLIEST NOTICES OF THE COPPER REGION—ONTONAGON MASS OF COPPER—ANCIENT NATIVE TRAFFIC—SOURCE OF THE MOUND-BUILDERS' COPPER—ARTS OF THE MISSISSIPPI VALLEYS—ANTIQUITY OF THE COPPER WORKINGS—DESERTION OF THE MINES.

THE same rational instinct which prompted man in his first efforts at tool-making, guided him in a discriminating choice of materials; and to this the discovery of metals, and the consequent first steps in metallurgy and the arts may be traced. The Bronze Age of Europe derives its name from the predominance of relics illustrative of a period which, though old compared with that of definite history, belongs to a comparatively late era, characterized by many traces of artistic skill, and of mastery in the difficult processes of smelting ores and alloying metals. But the dawn of the metallurgic era in the New World is marked by phases which derive their distinctive character from two widely separated regions; and of which one supplies an important link in the history of human progress, at best but partially indicated in the disclosures of European archæology.

To untutored man, provided only with implements of stone, the facilities presented by the great copper regions of Lake Superior, for the first step in the knowledge of metallurgy, were peculiarly available. The forests that flung their shadows along the shores of that great lake were the haunts of the deer, the beaver, the bear, and other favourite objects of the chase; the rivers and the lake abounded with fish; and the rude hunter had

to manufacture weapons and implements out of such materials as nature placed within his reach. The water-worn stone from the beach, patiently ground to an edge, made his axe and tomahawk; by means of which, with the help of fire, he could level the giants of the forest, or detach from them the materials for his canoe and paddle, his lance, club, or bow and arrows. The bones of the deer pointed his spear, or were wrought into his fish-hooks; and the shale or flint was chipped and ground into his arrow-head, after a pattern repeated with little variation, in all countries, and in every primitive age. But besides such materials of universal occurrence, the primeval occupant of the shores of Lake Superior found there a *stone* possessed of some very peculiar virtues. It could not only be wrought to an edge without liability to fracture; but it was malleable, and could be hammered out into many new and convenient shapes. This was the copper, found in connexion with the trappean rocks of that region, in inexhaustible quantities in a pure metallic state. In other rich mineral regions, as in those of Cornwall and Devon, the principal source of this metal is from ores, which require both labour and skill to fit them for economic purposes. But in the veins of the copper region of Lake Superior the native metal occurs in enormous masses, weighing hundreds of tons; and loose blocks of various sizes have been found on the lake shore, or lying detached on the surface, in sufficient quantities to supply all the wants of the nomade hunter. These, accordingly, he wrought into chisels and axes, armlets, and personal ornaments of various kinds, without the use of the crucible; and, indeed, without recognising any precise distinction between the copper which he mechanically separated from the mass, and the unmalleable stone or flint out of which he had been accustomed to fashion his spear and arrow-heads. This is confirmed by philological evidence. The root of the names for iron and copper in the Chippewa is the same abstract term, *wahbik*, used only in compound words, but signifying rock or stone. Thus *pewahbik*, iron; *ozahwahbik*, copper: lit. *ozah*, yellow, *wahbik*, stone; *oogedahbik*, on the top of a stone; etc.

The earliest references to Britain pertain exclusively to the peninsula of Cornwall and the neighbouring islands, whither the fleets of the Mediterranean were attracted in ages of vague antiquity, and the traders from Gaul resorted in quest of its metallic wealth. To that region, accordingly, we turn for the first glimpses of Northern Europe's history; and the mineral regions of the New World disclose some corresponding records of its long-forgotten

past. I am enabled to describe the general aspect and some of the most characteristic remains of these regions from personal exploration; and indeed some idea of their present condition is indispensable for preparing the mind to appreciate the changes wrought by time on localities which are now being rescued once more from the wilderness; but where, more perhaps than on any other spot on the American continent, may be witnessed the incipient traces of an aboriginal civilisation. The vast inland sea, which constitutes the head reservoir of the chain of lakes that sweep over the Falls of Niagara, and find their way by the river St. Lawrence to the ocean, has been as yet so slightly encroached upon by the pioneers of modern civilisation, that its general aspect scarcely differs from that which it presented to the eye of its first European explorers in the seventeenth century, or indeed to its Indian voyagers before the Spaniard first coasted the island shores of the Bahamas, and opened for Europe the gates of the West. With its wide extent of waters, covering an area of thirty-two thousand square miles, a lengthened period of sojourn in the regions with which it is surrounded, and many facilities for their exploration, would be required, in order to satisfy the curiosity of the scientific inquirer. But even a brief visit discloses much that is interesting, and that serves at once to illustrate, and to contrast with what comes under the observer's notice elsewhere.

Having employed both pen and pencil in noting striking features which catch the eye from their novelty: some description of what came under my notice in the ancient copper region may help the reader to estimate the lapse of time since its forest-glades and rocky promontories were enlivened by the presence of industrious miners. The memorials of Time's unceasing operations reach indeed to periods long prior to the earliest presence of man, and present certain lake phenomena, on a scale only conceivable by those who have sailed on the bosom of these fresh-water seas with as boundless a horizon as in mid Atlantic; and who have experienced the violence of the sudden storms to which they are liable. But while the same broad ocean-like expanse, and the violence of their stormy moods, characterize Ontario, Erie, Michigan, and Huron, it is only on Lake Superior that the traveller witnesses the grandeur and wild ruggedness of scenery commensurate with his preconceived ideas of such inland seas. Along its northern and western shores bold cliffs and rocky headlands frown in savage grandeur, from amid the unbroken wastes of forest that reach to the frozen regions around the Hudson's Bay, while the

gentler coast-lines of its southern shores are varied by some of the most singular conformations, wrought out of its rocky walls by the action of the waves. Among such rock-formations, no features are so remarkable as those presented by a portion of the extensive range of sandstone cliffs, which project in jagged and picturesque masses from the southern shore, soon after passing the Grand Sable : the first feature of commanding interest which meets the explorer after leaving the Rapids of Sault Ste. Marie. Here slightly undulating shores, with a coast-line of sand and loose shingle, are suddenly changed for a long reach of coast, still rounded in its forms, but rising abruptly in dune-like masses, to a height of upwards of three hundred and fifty feet. At their base the edges of the sandstone strata are occasionally exposed by the action of the waves, but the greater portion of their surface is formed by sand and debris ; and the same materials, loosely accumulated on their tops, afford only at rare intervals sufficient soil for the trees, which elsewhere line the whole southern shore with that unvarying monotony so familiar to the eye of the American traveller. Beyond the Grand Sable, the coast trends rapidly to the southward, until it reaches the most southerly point of the lake, in the bay behind Grande Island. In approaching this fine natural harbour from the east, a range of rocky cliffs extends with varying character and elevation for upwards of ten miles, and rises in some places to a height of fully two hundred feet. Here and there a dark cavernous archway breaking the surface of the rock, has suggested the French voyageurs' name of "Les Portails," but they are more generally known by that of "The Pictured Rocks,"—a term usually applied to rocks decorated with graven picturings of native artists. But the paintings of the "pictured rocks" have been pencilled alone by the same hand which hewed them out into their still more remarkable forms ; though a fresh interest has been given to their scenery by the interweaving of the Algonquin legends of the locality into Longfellow's Indian *Song of Hiawatha.*

The Pictured Rocks are situated between the copper regions and the ancient portage, which has been recently superseded by a canal, opening navigation for the largest vessels from Lake Huron to Lake Superior. One noticeable indication points to ancient native centres of population having lain to the west. The Indian name of the cliffs is *Schkue-archibi-kung,* or "the end of the rocks," manifestly conferred on them by voyagers from the western regions, when sailing towards the Ste. Marie rapids and the lower

lakes. Exploring their picturesque details in this direction, the voyager approaches a range of cliffs, banded in layers of white, yellow, red, and deep-brown strata; and streaked with strongly marked lines of perpendicular colouring, occasioned by water impregnated with metallic oxides oozing through the seams, and running over the broad bands of yellow sandstone which constitute the main mass, and lie between thin layers of metalliferous rock or shale. Many portions of the cliffs are indented by wedge-shaped recesses, which leave the intervening rock projecting like the wasted towers or bastions of an ancient castle, while the loose soil and shale at top, yielding more freely to the action of the atmosphere, frequently assume the form of a conical roofing, greatly adding to the artificial look of the whole. One group, especially, a little to the west of the magnificent natural arch styled "Le Grand Portail," suggests to the fancy a castellated ruin of Roman masonry, where the tiers of chalk or stone are banded by occasional layers of flat-tile Roman brick. The cliffs are arched, and perforated into caverns, on a gigantic scale. Two groups, designated respectively the "Chapel" and the "Miner's Castle," have been excavated into aisles, arched recesses, and columns, so as to rival the most picturesque ruins of the castled Rhine; while overhead the foliage of the uncleared forest crests their summits, and at one spot near the Chapel Rock, a beautiful cascade dashes in white foam over the cliffs into the lake.

This remarkable range of rocks lies in the centre of the long indentation, which, sweeping from Keweenaw Peninsula eastward to White Fish Point, forms the most distant coast from the northern shores of the lake. Here the cliffs have been exposed through unnumbered ages to the waves under the action of northerly winds; while a contemporaneous upheaval, prolonged probably through vast periods of time, has contributed no unimportant share in the operations by which their present forms have been produced.

Beyond Grande Island the voyager who pursues his course up the lake, comes once more on rocky cliffs in the vicinity of Marquette: so named after the Jesuit missionary by whom the upper waters of the Mississippi were reached in 1673. Important changes have been wrought in the interval. Mineral treasures, undreamt of by the ancient miners of Lake Superior, are now rewarding the industry of the Indians' supplanters. The iron-period, with its fully developed civilisation, is at length invading those western forest tracks; and when I visited Marquette in 1855, on the bold trappean rocks which form the landing, abraded and

scratched with the glacial action of a long superseded era, were piled the rich products of the "Jackson Iron Mountain," which rears its bold outline at a distance of twelve miles from the shore. Immediately to the north of this point the promontory of Presque Isle attracts attention from its bold outlines, presenting in some respects a striking contrast to the Pictured Rocks, though, like them, also indented and hollowed out into detached masses, and pierced with the wave-worn caverns of older levels of shore and lake. Here the water-worn sandstone and the igneous rocks overlie or intermingle with each other, in picturesque confusion: the symbol as it were of the great transition between the copper and iron eras. For it is just at Presque Isle that the crystalline schists, with their intermingling masses of trappean and quartz rocks, richly impregnated with the specular and magnetic oxide of iron, pass into the granite and sandstone rocks, which intervene between the ferriferous formations and the copper-bearing traps of Keweenaw Point. Beyond this, the rich copper-bearing region of the Keweenaw Peninsula stretches far into the lake, traversed in a south-westerly direction by magnificent cliffs of trappean rocks, presenting their lofty perpendicular sides to the south-east, and covered even amid the rocky debris with ancient forest-trees. In this igneous rock are found the copper veins, which in recent years have conferred such great commercial value on the district of Michigan, to which they belong.

When traversing some of the richest mineral districts of Lake Superior, surrounded by the gloom of the savage wilderness, it is difficult to realize the conception that these copper-bearing regions were ever before ransacked for their treasures, or explored by other than the stray Indian hunter, until the commencement of regular mining operations in very recent years. Yet I had the opportunity, not only of witnessing extensive mining operations now in progress, but of examining for myself evidences of the ancient miners' labours, which prove the lengthened practice there, at some remote period, of native metallurgic arts.

On landing at Eagle river, one of the points for shipping the copper ores, on the west side of the Keweenaw Peninsula, the track lies through dense forest, over a road in some parts of rough corduroy, and in others traversing the irregular exposed surface of the copper-bearing trap. After a time it winds through a gorge, covered with immense masses of trap and crumbling debris, amid which pine, and the black oak and other hard wood, have contrived

to find a sufficient soil for taking root and attaining their full proportions; while here and there the eye lights upon some giant pine overthrown by the wind, and turning up its great roots grasping the severed masses of rounded trap in their convolutions, like gravel clutched in the hands of a drowned seaman. On the summit of the ridge, the trap rock rises into a range of cliffs, which cannot be less than two hundred feet high; and in front of them is a sloping tail, the accumulated debris of ages, partially wooded, with trees which have in some places attained to an immense size, notwithstanding the apparent poverty of the soil.

In traversing this route the road lies in part along the banks of the Eagle river, where, some miles from its mouth, a detour has to be made to avoid a beaver dam, flooding a part of the river banks. No traces, however, give the slightest indication to the passing traveller that the hand of man had ever wrought any changes on the aspect of a region characterized by features so singularly wild and desolate-looking.

Beyond the cliffs, in a level bottom on the other side of the trap ridge, is the Cliff Mine settlement, one of the most important of all the mining works in operation in this region. I descended the perpendicular shaft by means of ladders, to a depth of sixty fathoms, and explored various of the levels: passing in some cases literally through tunnels made in the solid copper. The very abundance of the metal proves indeed, at times, a cause of diminution of the profits arising from working it. I witnessed the laborious process of chiselling out masses from the solid lump, to admit of their being taken to the surface, and transported through such tracts as have been described, to the Lake shore. The floor of the level was strewed with copper shavings, and the extreme ductility of the native copper was pointed out as a cause which precluded the application of any other force than that of manual labour, for separating it from the parent mass. I saw also beautiful specimens of silver, in a matrix of crystalline quartz, obtained from this mine, and the copper of the district is stated to contain on an average about 3·10 per cent. of silver. This is indeed by far the richest mineral locality that has yet been wrought. In one year upwards of sixteen hundred tons of copper have been procured from the Cliff Mine, and one mass was estimated to weigh eighty tons. Its mineral wealth was known to the ancients; but the skill and appliances of the modern miner give him access to veins entirely beyond the reach of the primitive metallurgist, who

knew of no harder material for his tools than the native rock and the ductile metal he was in search of.

At the Cliff Mine are preserved some curious specimens of ancient copper tools found in its vicinity, but it is to the westward of the Keweenaw Peninsula that the most extensive traces of the aboriginal miners' operations are seen. The copper-bearing trap, after crossing the Keweenaw Lake, is traced onward in a south-westerly direction till it crosses the Ontonagon river about twelve miles from its mouth; and at an elevation of upwards of three hundred feet above the lake. At this place the edges of the copper veins crop out in various places, exposing the metal in irregular patches over a considerable extent of country, many of which have been partially wrought by the ancient miners. Here, in the neighbourhood of the Minnesota Mine, the richest of all the modern works in the district, are extensive traces of trenches and other mining operations, which prove that the works must have been carried on for a long period. These excavations are partially filled up, and so overgrown in the long interval between their first excavation and their observation by recent explorers, that they scarcely attract attention. Nevertheless some of them have been found to measure from eighteen to thirty feet in depth; and one of them disclosed a detached mass of native copper, weighing upwards of six tons, resting on an artificial cradle of black oak, partially preserved by immersion in the water with which the trenches had been filled. Various implements and tools of the same metal also lay in the deserted trench, where this huge mass had been separated from its rocky matrix, and elevated on the oaken frame, preparatory to its removal entire. It appeared to have been raised about five feet, and then abandoned, abruptly as it would seem; since even the copper tools were found among the accumulated soil by which it had been anew covered up. The solid mass measured ten feet long, three feet wide, and nearly two feet thick; every projecting piece had been removed, so that the exposed surface was left perfectly smooth, possibly by other and ruder workers of a date subsequent to the desertion of the mining trench by its original explorers.

Mr. Charles Whittlesey, who has enjoyed considerable opportunities of personal observation in the copper region, discusses various questions connected with the ancient mines, and remarks in reference to the wood-work found in the old Minnesota trench: "I had a piece of one of these logs which was cut from a black

oak-tree about six inches in diameter, showing distinctly the marks of a narrow axe $1\frac{3}{4}$ inches wide, and very sharp. The character of the cut or stroke made by the axe, struck me at once as such as the copper axes would make that I had seen in Ohio, which were taken from the mounds. Although the timber beneath the mass of copper was very soft and tender, by reason of its age, it had not rotted from exposure, having been always covered by water." The marks of the instrument by which it had been cut, he adds, were as plain as on the recently hewn stumps in the vicinity. Messrs. Whitney and Foster remark on specimens acquired by them from the same ancient excavations: "This wood, by so long exposure to moisture, is dark-coloured, and has lost all its consistency. A knife-blade may be thrust into it as easily as into a peat-bog."

It was in the year 1847 that attention was first directed to such traces of ancient mining operations, by the agent of the Minnesota Mining Company. Following up the indications of a continuous depression in the soil, he came at length to a cavern where he found several porcupines had fixed their quarters for hybernation; but detecting evidences of artificial excavation, he proceeded to clear out the accumulated soil, and not only exposed to view a vein of copper, but found in the rubbish numerous stone mauls and hammers of the ancient workmen. Subsequent observation brought to light ancient excavations of great extent, frequently from twenty-five to thirty feet deep, and scattered over an area of several miles. The rubbish taken from these is piled up in mounds alongside; while the trenches have been gradually refilled with the soil and decaying vegetable-matter gathered through the long centuries since their desertion; and over all, the giants of the forest have grown, withered, and fallen to decay. Mr. Knapp, the agent of the Minnesota Company, counted 395 annular rings on a hemlock tree, which grew on one of the mounds of earth thrown out of an ancient mine. Mr. Foster also notes the great size and age of a pine-stump which must have grown and died since the works were deserted; and Mr. C. Whittlesey not only refers to living trees now flourishing in the gathered soil of the abandoned trenches, upwards of three hundred years old; but he adds: "on the same spot there are the decayed trunks of a preceding generation or generations of trees that have arrived at maturity and fallen down from old age." The deserted mines are found at numerous points extending over upwards of a hundred

miles along the southern shore of the lake; and reappear beyond it, in extensive excavations on Isle Royal. Sir William Logan reports others observed by him on the summit of a ridge at Maimanse, on the north shore, where the old excavations are surrounded by broken pieces of vein-stone, with stone mauls rudely formed from natural boulders. The extensive area over which such works have thus already been traced, the evidences of their prolonged working, and of their still longer abandonment, all combine to force upon the mind convictions of their remote antiquity.

At Ontonagon river I met with Captain Peck, a settler whose long residence in the country has afforded him many opportunities of noting the evidences of its ancient occupation. Repeated discoveries had led him to infer the great antiquity of the works; and he specially referred to one disclosure of ancient mining operations near the forks of the Ontonagon river, where, at a depth of upwards of twenty-five feet, stone mauls and other tools were found in contact with a copper vein; in the soil above these lay the fallen trunk of a large cedar, and over all grew a hemlock-tree, the roots of which spread entirely above the fallen tree in the accumulated soil with which the trench was filled, and indicated a growth of not less than three centuries. But the buried cedar, which in favourable circumstances is far more durable than the oak, represents another and longer succession of centuries, subsequent to that protracted period during which the deserted trench was slowly filled up with accumulations of many winters. Similar traces extend over a large area. In another excavation a bed of clay had been formed above the ancient flooring to the depth of a foot. On this lay the skeleton of a deer which had stumbled in and perished there; and over it clay, leaves, sand, and gravel had accumulated to a depth of nineteen feet. Not only are such indications frequent throughout the Keweenaw Peninsula, and to the westward and southward of Ontonagon; but on Isle Royale the abandoned mines disclose still stronger evidence of their great antiquity. The United States Geologists remark: "Mr. E. G. Shaw pointed out to us similar evidences of mining on Isle Royale, which can be traced lengthways for the distance of a mile. On opening one of these pits, which had become filled up, he found the mine had been worked through the solid rock, to the depth of nine feet, the walls being perfectly smooth. At the bottom he found a vein of native copper eighteen inches thick, including a sheet of pure copper lying

against the foot-wall." Stone hammers and wedges lay in great abundance at the bottom of the trenches, but no metallic implements were found; a proof perhaps that the mines of Isle Royale continued to be wrought after their workers had been hastily compelled to abandon those on the mainland. Mr. Shaw adopted the conclusion, from the appearance of the wall-rocks, the multitude of stone implements, and the material removed, that the labour of excavating the rock must have been performed solely with such instruments, with the aid, perhaps, of fire. But the appearance of the vein, and the extent of the workings, furnished evidence not only of great and protracted labour, but also of the use of other tools than those of stone. Accumulated vegetable matter had refilled the excavations to a level with the surrounding surface, and over this the forest extended with the same luxuriance as on the natural soil. In this barren and rocky region the filling up of the trenches with vegetable soil must have been the work of centuries; so that the whole aspect of the deserted mines of Isle Royale confirm the antiquity already ascribed to the ancient race.

The traces of the miners of Lake Superior have not entirely escaped the notice of Mr. Henry R. Schoolcraft, though he is inclined to undervalue the indications they afford that civilisation of no slight or transitory character once gave life to the forest wilds. Resident as he was for a considerable time in the locality, surrounded alone by Indian hunters, and Algonquin half-breeds, it is perhaps more difficult for him to realize the idea that such a savage wilderness had ever been otherwise than overshadowed by the primeval forest, than it is for those who have only studied the locality in the narratives of its explorers. My own impressions of its endless tracts of uncleared forests, enlivened as they were by a visit to an encampment of Saultaux Indians in all the simplicity of wild nature, rendered the contrast between its present aspect and the ideas which the traces of its ancient miners suggested, not less startling than those which arise from viewing, amid the scenes of the matured civilisation of Britain, the disclosures of a cromlech with its weapons and ornaments of stone. Mr. Schoolcraft, however, reposes undue faith in the evidence of impressions produced by long familiarity with the modern Indian and his forest haunts; such as, to the sojourner among the wandering Arabs, feeding their flocks above the mounds that diversify the solitude of the great plains of the Euphrates, would have seemed equal proof that since man first trod its ancient soil, it has been

known only to the wild desert nomade. "There is," he says, "a fresh magnificence in the ample area of Lake Superior, which appears to gainsay the former existence and exercise by man of any laws of mechanical or industrial power, beyond the canoe-frame and the war-club. And its storm-beaten and castellated rocks, however imposing, give no proofs that the dust of human antiquity, in its artificial phases, has ever rested on them." In this the historian of the Indian tribes is betrayed into an exaggerated depreciation of the memorials of earlier ages, from his disposition to ascribe to the same Red Indian stock every phase of civilized or savage life which reveals itself in the past history of the American continent.

It is an error to affirm, as he does, that artificial mounds, embankments, or traces of earth-works, suggestive of correspondence with those of the Mound-Builders, are entirely wanting in the copper region. Its memorials have as yet been very partially disclosed; but thus far we derive, from many independent observations, confirmation of the indisputable fact that what appear to the eye of the traveller as the giants of the primeval forest, are the growth of comparatively modern centuries, subsequent to the era when the shores of Lake Superior rang with the echoes of industrial toil, wrought by an ancient but long-extinct population. Two or three centuries would seem altogether inadequate to furnish the requisite time for the most partial accumulation of soil and decayed vegetable matter with which the old miners' trenches have been filled, before the forest began to reassert its ancient sway, and clothe in the rich verdure of nature's wildest freshness, their abandoned mines. Four centuries thereafter are indisputably recorded by recent survivors of the forest, independent of all traces of previous arborescent generations; and thus we perceive that in the mining excavations and the tools of the copper regions of Lake Superior, we look on memorials of a metallurgic industry long prior to those closing years of the fifteenth century, in which the mineral wealth of the New World awoke the Spanish lust for gold. An uncertain, yet considerable interval must be assumed between the abandonment of those ancient works, and the wild forest's earliest growth, and thus we are thrown back into centuries corresponding to Europe's early mediæval era for a period to which to assign at the very latest those singularly interesting traces of a lost American civilisation.

Owing to the filling up of the ancient mining trenches with

water immediately on their abandonment by their workers, not only the copper and stone implements of the miners are found, but examples of wooden tools and timber framing have also been preserved, in several cases in wonderful perfection, and these furnish interesting supplementary evidence of the character of their industrial arts.

Of the wooden implements, the most noticeable are the shovels, by means of which the soil was excavated. The accompanying woodcut represents two of them worn away to the one side, as

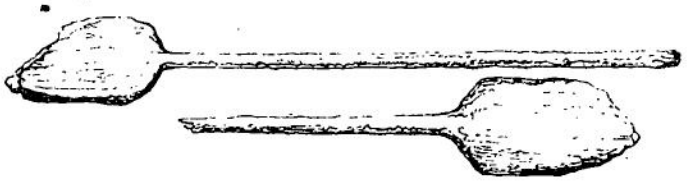


FIG. 10.—Miners' Shovels.

in most of the examples found, as if used for scraping rather than digging the soil. Mr. Whittlesey gives a drawing of one which measured three and a half feet long, recovered among the loose materials thrown out from an extensive rock excavation in the side of a hill about four miles south-east of Eagle Harbour. Part of a wooden bowl used for baling water, and troughs of cedar-bark, were also found in the same débris, above which grew a birch about two feet in diameter, with its lower roots scarcely reaching through the ancient rubbish to the depth at which those relics lay. Mr. Foster describes another wooden bowl found at a depth of ten feet, in clearing out some ancient workings opened by the agent of the Forest Mine, and which, from the splintered pieces of rock and gravel embedded in its rim, must have been employed in baling water. Similar implements have been found in other workings, but they speedily perish on being exposed to the air. All of them appear to have been made of white cedar, the indestructible nature of which, when kept under water, or in a moist soil, is abundantly illustrated by the experience of settlers who, on attempting to clear and cultivate a cedar swamp, discover that the dead trunks, exhumed undecayed after centuries of immersion, rest above still older cedar-forests, seemingly unaffected by the influences which restore alike the oak and the pine to the vegetable mould of the forest soil.

The process of working the ancient mines seems to be tolerably clearly indicated by the discoveries referred to. The soil having

been removed by means of wooden spades, doubtless with the aid of copper tools to break up the solid earth and clay: remains of charcoal, met with in numerous instances on the surface of the rock, show that fire was an important agent for overcoming the cohesion between the copper and its matrix. Before the introduction of gunpowder, fire was universally employed in excavating rock, and where fuel abounds, as in the old Harz and Altenberg mining districts of Europe, it is even now found to be quite as economical in destroying silicious rocks. Stone hammers or mauls were next employed to break up the metalliferous rock. These have been found in immense numbers on different mining sites. Mr. Knapp obtained in one locality upwards of ten cart-loads; and I was shown a well in the neighbourhood of the Ontonagon trenches constructed almost entirely of stone hammers, obtained from ancient workings in the immediate vicinity. Many of these are mere water-worn boulders of greenstone or porphyry, roughly chipped in the centre, so as to admit of their being secured by a withe around them. But others are well finished, with a single or double groove for attaching the handle by which they were wielded. They weigh from ten to forty pounds; but many are broken, and some of the specimens I saw were worn and fractured from frequent use.

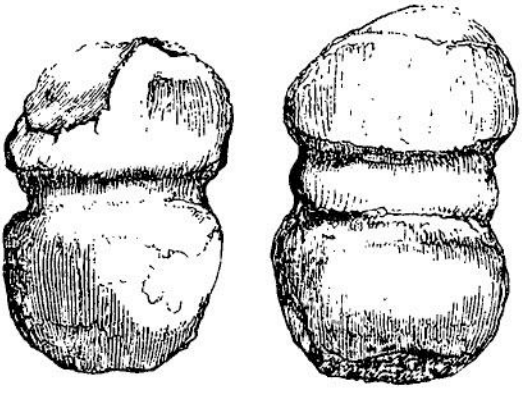


FIG. 11.—Miners' Stone Mauls.

The extent to which co-operation was carried on by the ancient miners with the imperfect means at their command is illustrated by the objects recovered on exploring one of their trenches, on a hill to the south of the Copper Falls mines. On removing the accumulations from the excavation, stone axes of large size made

of greenstone, and shaped to receive withe-handles, and some large round greenstone masses that had apparently been used for battering-rams, were found. "They had round holes bored in them to the depth of several inches, which seemed to have been designed for wooden plugs to which withe handles might be attached, so that several men could swing them with sufficient force to break the rock and the projecting masses of copper. Some of them were broken, and some of the projecting ends of rock exhibited marks of having been battered in the manner here suggested."[1]

But the industrious miners fully appreciated the practical utility of the metal they were in search of; and it is not to be supposed that they employed themselves thus laboriously in mining the copper, and yet used in such operations only stone and wooden tools. Copper axes, gads, chisels, and gouges, as well as knives and spear-heads, of considerable diversity of form, have been repeatedly brought to light, all of them wrought from the virgin copper by means of the hammer, without smelting, alloy, or the use of fire. At Ontonagon, I had an opportunity of examining an interesting collection of mining relics, found a few months before in the neighbourhood. These consisted of copper tools, with solid triangular blades like bayonets, one fourteen inches, and the others about twelve inches in length; a chisel, and two singularly shaped copper gouges about fourteen inches long and two inches wide, the precise use of which it would be difficult to determine.[2] The whole were discovered buried in a bed of clay on the banks of the river Ontonagon, about a mile above its mouth, during the process of levelling it for the purposes of a brick-field. Above the clay was an alluvial deposit of two feet of sand, and in this, and over the relics of the ancient copper workers, a pine-tree had grown to full maturity. Its gigantic roots gave proof, in the estimation of those who witnessed their removal, of more than two centuries' growth; while the present ordinary level of the river is such that it would require a rise of forty feet to make the deposit of sand beneath which they lay.

An experienced practical miner, who had been among the first to reopen some of the ancient works at the Minnesota mine, re-

[1] Squier's *Aboriginal Monuments of the State of New York.* Appendix, p. 184.

[2] Illustrations of some of those, and of other ancient implements, are engraved in Mr. Whittlesey's contribution to the Smithsonian Institution on the *Ancient Mining on the Shores of Lake Superior.* But the drawings are rough pen-and-ink sketches, and convey an idea of rudeness which does great injustice to the originals.

cognised in the copper gouges implements adapted to produce the singular tool-marks which then excited his curiosity. Subjoined is a representation of a peculiar type of copper tools, sketched from one of those found at Ontonagon, which has been repeatedly

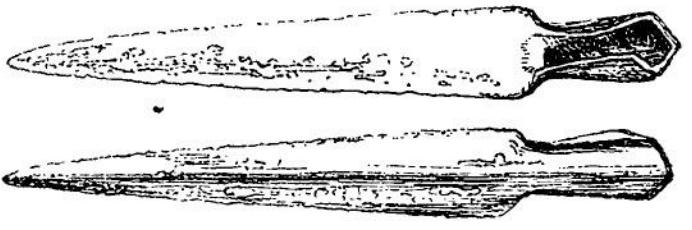


FIG. 12.—Ontonagon Copper Implement.

met with among the relics of the copper region. The socket, formed by hammering out the lower part flat, and then turning it over partially at each side, corresponds to some primitive forms of bronze implements found in Britain and the north of Europe; but the latter are cast of a metallic compound, and prove a skill in metallurgy far in advance of the old metal-workers of Ontonagon.

The details of another, and in some respects more interesting discovery, were communicated to me during my visit to Lake Superior. At a locality lying to the east of Keweenaw Point, in the rich iron district of Marquette, in what appears to have been the ancient bed of the river Carp, and about ten feet above the present level of its channel, various weapons and implements of copper were found. Large trees grew over this deposit also, and the evidences of antiquity seemed not less obvious than in that of Ontonagon. The relics included knives, spear or lance heads, and arrow-heads, some of which were ornamented with silver. One of the knives, made, with its handle, out of a single piece of copper, measured altogether about seven inches long, of which the blade was nearly two-thirds of the entire length, and of an oval shape. It was ornamented with pieces of silver attached to it, and was inlaid with a stripe of the same metal from point to haft. Numerous fragments and shavings of copper were also found, some of which were such as, it was assumed, could only have been cut by a fine sharp tool; and the whole sufficed to indicate, even more markedly than those at Ontonagon, that not only was the native copper wrought in ancient times in the Lake Superior regions, but that manufactories were established along its shores, and on the banks of its navigable rivers, where

native artisans fashioned the metal into tools and weapons for war and the chase. The recognition of silver as a distinct metal by the present race of Indians is proved by the Algonquin primitive *shooneya*, by which it is designated in Chippewa; whereas gold is only known as *ozahwah-shooneya*, or yellow silver.

A lively interest is felt throughout the copper regions in the relics of the ancient miners; and the modern occupants of their works manifest an intelligent appreciation of the uses of such antique remains as a means of throwing light on the history of former ages. I found a peculiar importance attached by miners and others to the hardness of the wrought copper implements. This they contrasted, in more than one case, with the ductility of the chips and fragments of unwrought metal found along with them, as well as with the condition of the native copper when first brought from the mine, and maintained that it afforded proof of a knowledge acquired by the ancient metallurgist of some hardening process unknown to the modern copper-smith. Copper and bronze chisels are frequently found among the ancient relics of the Nile valley, and the paintings of Egypt exhibit her sculptors hewing out the colossal memnons of limestone and granite by means of yellow-coloured tools, made as may be assumed of copper, which was wrought by the Egyptians in the mines of Maghara, near Sinai, so early as the reign of Suphis, the builder of the great pyramid. At an early date, indeed, bronze superseded the copper in use in Egypt, but repeated discoveries of chisels and other tools of the pure metal have been made in Egyptian tombs.

In 1856, Dr. Thomas Reynolds of Brockville exhibited to the Canadian Institute a collection of copper and other relics discovered in that neighbourhood under singular circumstances; and possessing a special interest owing to the distance of the site from the copper regions of Lake Superior. They included a peculiarly-shaped chisel or gouge, six inches in length, figured here, a rude spear-head, seven inches long, and one or two small daggers or knives, all wrought by means of the hammer, out of native copper which had never been subjected to fire, as is proved by the silver remaining in detached crystals in the copper. They were found at the head of Les Galops Rapids, on the River St. Lawrence, about fifteen feet below the surface, in a soil composed of clay and sand, along with twenty skeletons disposed in a circular space with their feet towards the centre. Dr. Reynolds remarks of them: "Some of the skeletons were of gigantic pro-

portions. The lower jaw of one is sufficiently large to surround the corresponding bone of an adult of our present generation. The condition of the bones furnished indisputable proof of their great antiquity. The skulls were so completely reduced to their earthy constituents that they were exceedingly brittle, and fell in pieces when removed and exposed to the atmosphere. The metallic remains, however, of more enduring material, as also several stone chisels and gouges, and some flint arrow-heads, all remain in their original condition, and furnish evidence of the same rude arts which we know to be still practised by the aborigines of the far West. With reference to the question whether these copper remains are of European or native origin, their structure is very

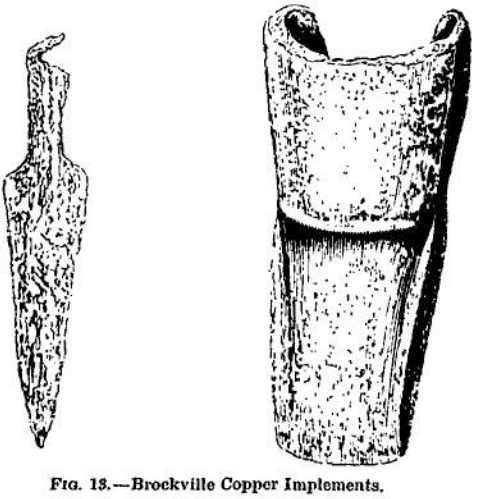


FIG. 13.—Brockville Copper Implements.

rude; they appear to have been wrought solely by means of the hammer, without the melting-pot or the aid of fire; while they were accompanied by stone and flint tools and weapons, no implements were found made of iron; and finally, the copper appears to correspond in quality with the specimens of the native metal now found in such large quantities on the shores of Lake Superior. There is also a curious fact, which these relics appear to confirm, that the Indians possessed the art of hardening and tempering copper, so as to give it as good an edge as iron or steel. This ancient Indian art is now entirely lost."

The reference thus made to the popular theory of some lost art of hardening the native copper, afforded an opportunity of testing it in reference to the Brockville relics. They were accordingly

submitted to my colleague, Professor Henry Croft, of University College, Toronto, with the following results: The object of the experiments was to ascertain whether the metal of which those implements are made is identical with the native copper of the Lake Superior mines, or whether it has been subjected to some manufacturing process, or mixed with any other substance, by which its hardness might have been increased. A careful examination establishes the following conclusions:—No perceptible difference could be observed between the hardness of the implements and that of metallic copper from Lake Superior. The knife or small dagger was cleansed as far as possible from its green coating; and its specific gravity ascertained as 8·66. A fragment, broken off the end of the broad, flat implement, described as a "copper knife of full size," having been freed from its coating, was found to have a specific gravity of 8·58. During the cleaning of this fragment, a few brilliant white specks became visible on its surface, which appeared, from their colour and lustre, to be silver. The structure of the metal was also highly laminated, as if the instrument had been brought to its present shape by hammering out a solid mass of copper, which had either split up, or had been originally formed of several pieces. These laminæ of course contained air, and the metal was covered with rust, hence the specific gravity. The process by which a flat piece of copper has been overlapped, and wrought with the hammer into a rude spear-head, is shown in the accompanying illustration. A portion of very solid

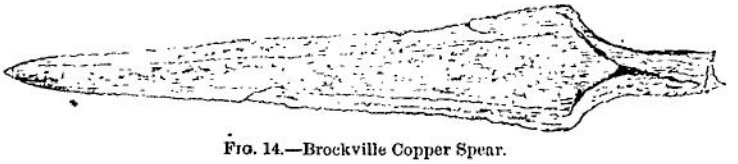


FIG. 14.—Brockville Copper Spear.

copper, from Lake Superior, of about the same weight as the fragment, was weighed in water, and its gravity found to be 8·92; in this piece there were no cavities perceptible. The specific gravity of absolutely pure copper varies from 8·78 to 8·96, according to the greater or less degree of aggregation it has received during its manufacture. The small difference between these numbers leads to the conclusion that the implements were made of pure copper. The fragment was completely dissolved by nitric acid; and the solution, on being tested for silver by hydrochloric acid, gave a scarcely perceptible opacity, indicating the presence of an exceed-

ingly minute trace of silver. The copper having been separated by hydro-sulphuric acid, the residual liquid was tested for other metals. A very minute trace of iron was detected. The native copper from Lake Superior was tested in the same manner, and was found to contain no trace of silver, but a minute trace of iron, the quantity being apparently about the same as in the fragment. From this, it appears that the implements are composed of copper almost pure, differing in no material respect from the native copper of Lake Superior.

The result of the above experiments is sufficient to show that, in the case of the Brockville relics, the theory of a lost art of hardening and tempering copper was a mere reflex of the prevalent popular fallacy, without the slightest foundation in fact; and there is no reason for anticipating a different result in other cases in which the same theory is tested.

In his account of the discovery of those relics, Dr. Reynolds assumes them to pertain to the present Indian race. The evidences of antique sepulture, however, are unmistakable, and other proofs suggest a different origin. Mr. Squier, by whom they had been previously described, remarks in the Appendix to his *Aboriginal Monuments of the State of New York*:[1] "Some implements entirely corresponding with these have been found in Isle Royale, and at other places in and around Lake Superior." But besides the copper implements, a miniature mask of terra-cotta lay in the same deposit, of peculiar workmanship, and suggestive rather of relation to the arts of the Mound-Builders. It is figured by Mr. Squier from an incorrect drawing, which indicates a minuter representation of Indian features than the original justifies. It is a rude mask, —engraved here, the size of the original, from a photographic copy,— such as is by no means uncommon among the small terra-cottas of Mexico and Central America. This mingling of traces of a certain amount of artistic skill with the arts of the primitive metallurgist, entirely corresponds with the disclosures of the ancient mounds of the

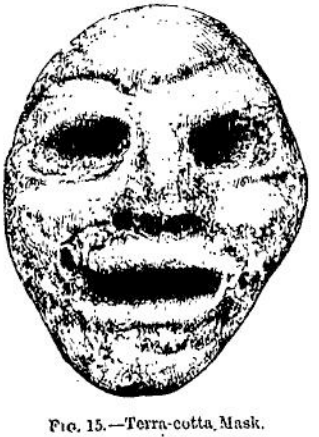


FIG. 15.—Terra-cotta Mask.

[1] *Smithsonian Contributions*, vol. ii. pp. 14, 176.

Mississippi; and, indeed, agrees with other partial manifestations of art in an imperfectly developed civilisation.

I was struck, when examining the rude mauls of the ancient miners of Ontonagon, by the resemblance traceable between them and some which I have seen, obtained from ancient copper workings of North Wales. In a communication made to the British Archæological Institute by the Hon. William Owen Stanley, in 1850, he gave an account of an ancient shaft broken into at the copper mines of Llandudno, Carnarvonshire. In this were found mining implements, consisting of chisels, or picks of bronze, and a number of stone mauls of various sizes, weighing from about 2 lbs. to 40 lbs., rudely fashioned: having been all, as their appearance suggested, used for breaking, pounding, or detaching the ore from the rock, and pertaining, it may be presumed, to a period long prior to the Roman occupation of Britain. These primitive implements are stated to be similar to the water-worn stones found on the sea-beach at Pen Mawr, from which most probably those suitable for the purpose have been selected. Mr. Stanley also describes others of the same character, and corresponding to those found on the shores of Lake Superior, which had been met with in ancient workings in Anglesea. Were we, therefore, disposed to generalize from such analogies, as ingenious speculators on the lost history of the New World have been prone to do, we might trace in this correspondence a confirmation of the supposed colonization of America, in the twelfth century, by Madoc, the son of Owen Gwynnedd, king of North Wales. But the resemblance between the primitive Welsh and American mining tools, can be regarded only as evidence of the corresponding operations of the human mind, when placed under similar circumstances and with the same limited means, which is illustrated in so many ways by the arts of the stone-period, whether of the most ancient or of modern date. Nor can such numerous correspondences be regarded as altogether accidental. They confirm the idea of certain innate and instinctive operations of human ingenuity, ever present and ready to be called forth for the accomplishment of similar purposes by the same limited means; and which reveal to us the same type in the works of the ancient Mound-Builder and the relics of the British barrow of ante-Christian times, as among the most recent products of the Red Indian or the Polynesian artificer. The fact that the flint weapons of the French and English drift differ essentially from those found in ancient barrows, has not

failed to attract all the attention it justly merits. They are much larger, ruder, and of different forms; and it is a fact, the significance of which is still open to further elucidation, that the stone axe of the South Sea Islander of the eighteenth century, presents a close resemblance to that of the British or Gaulish fabricator of ante-Christian periods; and the modern flint lance or arrow-head of the Red Indian can scarcely be distinguished from that found in the most ancient British graves: while no such correspondence is traceable between the latter and the far older manufactured weapons in the underlying drift. But here the art-traces of America's prehistoric centuries come to our aid, and supply the missing link; for the same cannot be said of the discs and spear-heads of flint and hornstone, recovered in great numbers from the Ohio mounds, and occasionally dug up in other localities. Some of the latter, indeed, correspond so closely to the oval or almond-shaped implements from the valley of the Somme, that either might be selected as illustrations of the type.

From this review of the evidences of long-abandoned mining operations on the shores and islands of Lake Superior, it cannot admit of doubt that in these we look on the traces of an imperfectly developed yet highly interesting native civilisation, pertaining to centuries long anterior to the discovery of America in the fifteenth century.

The question naturally arises: By whom were those ancient mines of the northern copper region wrought? Was it by the ancestry of the present Indian tribes of North America, or by a totally distinct and long-superseded race? The whole tendency of opinion among American writers has latterly been towards a unity and comprehensive isolation of the races and arts of the New World; and hence the theories alike of Morton and of Schoolcraft, though founded on diverse premises, have favoured the idea that the rude germs of all that is most noticeable even in the civilisation of Central America may be found among the native arts and the manners and customs of the forest tribes. But neither the traditions nor the arts of the Indians of the northern lakes supply any satisfactory link connecting them with the Copper-Miners or the Mound-Builders. Loonsfoot, an old Chippewa chief, living at the mouth of St. Louis River, where it enters Lake Superior, is said to trace back his ancestry by name, as hereditary chiefs of his tribe, for upwards of four hundred years. At the request of Mr. C. Whittlesey he was questioned by an educated half-breed, a nephew of

his own, relative to the ancient copper mines, and his answer was in substance as follows:—"A long time ago the Indians were much better off than they are now. They had copper axes, arrow-heads, and spears, and also stone axes. Until the French came here, and blasted the rocks with powder, we have no traditions of the copper mines being worked. Our forefathers used to build big canoes and cross the lake over to Isle Royale, where they found more copper than anywhere else. The stone hammers that are now found in the old diggings we know nothing about. The Indians were formerly much more numerous and happier. They had no such wars and troubles as they have now." At La Pointe on Lake Superior, it was my good fortune to meet with *Beshekee*, or Buffalo, a rugged specimen of an old Chippewa chief. He retained all the wild Indian ideas, though accustomed to frequent intercourse with white men, boasted of the scalps he had taken, and held to his pagan creed as the only religion for the Indian, whatever the Great Spirit might have taught the white man. His grandson, an educated half-breed, acted as interpreter, and his reply to similar inquiries was embodied in the following sententious declaration of Indian philosophy:—"The white man thinks he is the superior of the Indian, but it is not so. The Red Indian was made by the Great Spirit, who made the forests and the game, and he needs no lessons from the white man how to live. If the same Great Spirit made the white man, he has made him of a different nature. Let him act according to his nature; it is the best for him; but for us it is not good. We had the red-iron before white men brought the black-iron amongst us; but if ever such works as you describe were carried on along these Lake shores before white men came here, then the Great Spirit must once before have made men with a different nature from his red children, such as you white men have. As for us, we live as our forefathers have always done."

La Pointe, or Chaquamegon, where this interview took place, was visited by the Jesuit Father, Claude Alloüez, in the month of October 1666, and is described by him as a beautiful bay, the shores of which were occupied by the Chippewas in such numbers that their warriors alone amounted to eight hundred. In the journal of his travels, he thus refers to the mineral resources for which the region is now most famed:—"The savages reverence the lake as a divinity, and offer sacrifices to it because of its great size, for it is two hundred leagues long and eighty broad; and also,

because of the abundance of fish it supplies to them, in lieu of game, which is scarce in its environs. They often find in the lake pieces of copper weighing from ten to twenty pounds. I have seen many such pieces in the hands of the savages; and as they are superstitious, they regard them as divinities, or as gifts which the gods who dwell beneath its waters have bestowed on them to promote their welfare. Hence they preserve such pieces of copper wrapped up along with their most prized possessions. By some they have been preserved upwards of fifty years, and others have had them in their families from time immemorial, cherishing them as their household gods. There was visible for some time, near the shore, a large rock entirely of copper, with its top rising above the water, which afforded an opportunity for those passing to cut pieces from it. But when I passed in that vicinity nothing could be seen of it. I believe that the storms, which are here very frequent, and as violent as on the ocean, had covered the rock with sand. Our Indians wished to persuade me it was a divinity which had disappeared, but for what reason they would not say."[1]

Such is the earliest notice we have of the Indian ideas of the native copper, and their mode of acquiring it. It accords with all subsequent information on the same subject, and is opposed to any tradition of their ancestors having been the workers of the abandoned copper mines. A secrecy, resulting from the superstitions associated with the mineral wealth of the great Lake, appears to have thrown impediments in the way of the earlier inquirers after the sources of the copper. Father Dablon, another member of the Society of Jesus, narrates a marvellous account communicated to him, of four Indians who, in old times, before the coming of the French, had lost their way in a fog, and at length effected a landing on Missipicooatong. This was believed to be a floating island, and mysteriously variable in its local position and aspects. The wanderers cooked their meal in Indian fashion, by heating stones and casting them into a birch-bark pail filled with water. The stones proved to be lumps of copper, which they carried off with them; but they had hardly left the shore, when a loud and angry voice, ascribed by one of them to Missibizi, the goblin spirit of the waters, was heard exclaiming, "What thieves are these that carry off my children's cradles and playthings?" One of the Indians died immediately from fear, and two others soon after,

[1] *Relations des Jésuites*, vol. iii. 1666 *et* 1667.

while the fourth only survived long enough to reach home and relate what had happened, before he also died, having no doubt been poisoned by the copper used in cooking. Ever after this the Indians steered their course far off the site of the haunted island. In the same relation, Father Dablon tells that near the river Ontonagon, or Nantonagon as he calls it, is a bluff from which masses of copper frequently fall out. One of these was presented to him weighing one hundred pounds; and pieces weighing twenty or thirty pounds are stated by him to be frequently met with by the squaws when digging holes for their corn. The locality thus celebrated by the earliest French missionaries, for the traces of its mineral wealth, is in like manner referred to by the first English explorer, Alexander Henry: a bold adventurer, who visited the Island of Mackinac, at the entrance of Lake Michigan, shortly before the Treaty of Paris in 1763, and was one among the few who escaped a treacherous massacre perpetrated by the Indians on the whites at Old Fort Mackinac. In his *Travels and Adventures in Canada and the Indian Territories*, he mentions his visiting the River Ontonagon, in 1765, and adds, "I found this river chiefly remarkable for the abundance of virgin copper which is on its banks and in its neighbourhood. The copper presented itself to the eye in masses of various weight. The Indians showed me one of twenty pounds. They were used to manufacture this metal into spoons and bracelets for themselves. In the perfect state in which they found it, it required nothing but to be beat into shape."[1] In the following year, Henry again visited the same region. "On my way," he says, "I encamped a second time at the mouth of the Ontonagon, and now took the opportunity of going ten miles up the river, with Indian guides. The object which I went most expressly to see, and to which I had the satisfaction of being led, was a mass of copper, of the weight, according to my estimate, of no less than five tons. Such was its pure and malleable state that with an axe I was able to cut off a portion weighing a hundred pounds." This mass of native copper which thus attracted the adventurous European explorer nearly a century ago, has since acquired considerable celebrity, as one of the most prominent encouragements to the mining operations projected in the Ontonagon and surrounding districts. It is now preserved at Washington, and is believed to be the same to which Charlevoix refers as a sacrificial block held in peculiar veneration by the

[1] Henry's *Travels and Adventures*, New York, 1809, p. 194.

Indians, and on which, according to their relation, a young girl had been sacrificed. The Jesuit father did not obtain access to it, as it was the belief of the Indians that if it were seen by a white man, their lands would pass away from them. Those notices are interesting as showing to what extent the present race of Indians were accustomed to avail themselves of the mineral wealth of the copper regions, and by what means they acquired the metal. Illustrations of a like kind might be greatly multiplied, but they are all nearly to the same effect, exhibiting the Indian gathering chance masses, or hewing off pieces from the exposed copper lodes, in full accordance with the simple arts of his first stone-period; but affording no ground for crediting him with any traditionary memorials of connexion with the industrial mining race that once excavated the trenches, and laid bare the mineral treasures of the great copper region.

The evidence indicative of the great length of time which has intervened since the ancient miners of Lake Superior abandoned its shores, receives confirmation from traces of a long-protracted traffic carried on by the subsequent occupants of their deserted territory. The mineral wealth that still lay within reach of the non-industrial hunter of the forests which grew up and clothed the deserted works, in the interval between their abandonment and re-occupation, furnished him with a prized material for barter. The head-waters of the Mississippi lie within comparatively easy reach of an Indian party, carrying light birch-bark canoes over the intervening portages, as is practised by the Indians at the present day; and, once launched on its broad waters, the whole range of the continent through twenty degrees of latitude is free before them. Through Lake Huron and the Ottawa into the St. Lawrence, and by Lakes Huron, Erie, and Ontario, into the Hudson, other extensive areas of native exchange were commanded. Articles wrought in the brown pipe-stone of the Upper Mississippi, the red pipe-stone of the Couteau des Prairies, west of St. Peters, and the copper of Lake Superior, constituted the wealth which the old north had to offer. In return, one of the most valued exchanges appears to have been the large tropical shells of the Gulf of Florida and the West Indian seas: from which wampum-beads, pendants, gorgets, and personal ornaments of various kinds were manufactured; while many of them, as we have seen, were preserved entire, and prized, along the shores of the northern lakes, as among the most marvellous of natural productions.

Copper is also obtained in its native state still farther north; and Mackenzie, in his *Second Journey*, mentions its being in common use among the tribes on the borders of the Arctic Sea; by whom it is wrought into spear and arrow heads, and a considerable variety of personal ornaments. Mr. Henry found the Christinaux of Lake Winipagon wearing bracelets and other ornaments of copper; and most of the earlier explorers describe copper implements and personal ornaments among widely-scattered Indian tribes of the New World. But in all cases these appear to have been rudely wrought with the hammer, and sparingly mingled with the more abundant weapons and implements of stone, made by a people whose sole metallurgic knowledge consisted in gathering or procuring by barter the native copper,—just as they procured the red or brown pipe-stone,—and hammering the mass into some simple useful form. Silver, procured in like manner, was not unknown to them; and pipes inlaid both with silver and lead are by no means rare. But it is only when we turn to the scenes of a native-born civilisation, in Mexico, Central America, and Peru, where metallurgic arts were developed, that we discover the crucible and furnace, and find copper superseded by the more useful alloy, bronze.

But intermediately between the copper regions of Lake Superior and the ancient southern scenes of native American civilisation, the Mississippi and its great tributaries drain a country remarkable for monuments of a long forgotten past, not less interesting and mysterious than the forsaken mines of Keweenaw and Ontonagon, or Isle Royale. These great earthworks are ascribed to an extinct race, conveniently known by the name of the Mound-Builders. Careful investigations into their structure and contents prove these builders to have been a people among whom copper was in frequent use, but by them also it was worked from the native metal only by the hammer. The invaluable service of fire in reducing and smelting ores, moulding metals, and adapting them to greater usefulness by well-proportioned alloys, was unknown; and the investigation and analysis of their cold-wrought tools seem to prove that the source of their copper was the Lake Superior mines. But though the ancient Mound-Builder was thus possessed of little higher metallurgic knowledge than the Indian hunter: he manifested in other respects a capacity for extensive and combined operations, the memorials of which perpetuate his monumental skill and persevering industry in the gigantic earthworks from whence his name

is derived. From these we learn that there was a period in America's unrecorded history, when the valleys of the Mississippi and its tributaries were occupied by a numerous settled population. Alike in physical conformation—so far as very imperfect evidence goes,—and in some of their arts, these Mound-Builders approximated to races of Central and South America, and differed from the Red Indian occupants of their deserted seats. They were not, to all appearance, far advanced in civilisation. Compared with the people of Mexico or Central America, when first seen by the Spaniards, their social and intellectual development was probably rudimentary. But they had advanced beyond that stage in which it is possible for a people to continue unprogressive. The initial steps of civilisation had been inaugurated, and the difference between them and the civilized Mexicans is less striking than the contrast which the evidences of their settled condition, and the proofs of extensive co-operation in their numerous earthworks supply, when compared with all that pertains to the nomade tribes by whom the American forests and prairies have been exclusively occupied during the centuries since Columbus.

The Mound-Builders were greatly more in advance of the Indian hunter than behind the civilized Mexican. They had acquired habits of combined industry; were the settled occupants of a specific territory; and are proved, by numerous ornaments and implements of copper deposited in their monuments and sepulchres, to have been familiar with the mineral resources of the northern lake regions, whether by personal enterprise, or by a system of exchange. What probabilities there are suggestive of a connexion between the Mound-Builders and the ancient Miners, will be discussed in a later chapter, along with other and allied questions; but to just such a race, with their imperfect mechanical skill, their partially developed arts, and their aptitude for continuous combined operations, may be ascribed, *à priori*, such mining works as exist on the shores of Lake Superior, overshadowed with the forest growth of centuries. The mounds constructed by the ancient race are in like manner overgrown with the evidences of their long desertion; and the condition in which recent travellers have found the ruined cities of Central America, may serve to show what even New York, Washington, and Philadelphia; what Toronto, Montreal, and Quebec, would become after a very few centuries, if abandoned, like the desolate cities of Chichenitza or Uxmal, to the inextinguishable luxuriance of the American forest growth.

Mr. C. Whittlesey thus endeavours to assign an approximate date to the era of the ancient miners: "The living trees, with their roots entwining among the mauls, skids, and shovels of the old miners, are reliable witnesses as to the least space of time since the mines were abandoned. The age of such trees varies from three hundred to three hundred and fifty years. Beneath the shades of these patriarchs of the forest, are the prostrate and rotten trunks of a preceding generation." But the changes which occur in the varieties of the forest growth on cleared and abandoned tracts, "add another score to the tally of ages that have passed since the earthworks were evacuated;" and thus the abandonment of the mines must be placed five or six centuries before our time. In this Mr. Whittlesey greatly reduces the period assigned by him in earlier computations. But five hundred years more are the least that he conceives must be allowed during which the mines were wrought; and thus by a moderate estimate, we are carried back to a period coeval with that of Europe's dark ages. The changes wrought on the river-courses and terraces of the valleys of the Mississippi, add evidence suggestive of a still longer interval since the earthworks of that region were constructed. But whatever be the dates of their commencement or desertion, the condition in which some of the ancient works on Lake Superior have been found, when re-opened in recent times, is suggestive of peculiar circumstances attending their abandonment. It is inconceivable that the huge mass of copper discovered in the Minnesota mine, resting on its oaken cradle, beneath the accumulations of centuries, was abandoned merely because the workmen, who had overcome the greatest difficulties in its removal, were baffled in the subsequent stages of their operations, and contented themselves by chipping off any accessible projecting point. Well-hammered copper chisels, such as lay alongside of it, and have been repeatedly found in the works, were abundantly sufficient, with the help of stone hammers, to enable them to cut it into portable pieces. If, indeed, the ancient miners were incapable of doing more with their mass of copper, in the mine, than breaking off a few projections, to what further use could they have turned it when transported to the surface? It weighed upwards of six tons, and measured ten feet long and three feet wide. The trench at its greatest depth was twenty-six feet; while the mass was only eighteen feet from the surface, and in the estimation of the skilled engineer by whom it was first seen, it had been elevated upwards of five feet since it was placed on its

oaken frame. The excavations to a depth of twenty-six feet, the dislodged copper block, and the framework prepared for elevating the solid mass to the surface, all consistently point to the same workmen. But the mere detachment of a few accessible projecting fragments is too lame and impotent a conclusion of proceedings carried thus far on so different a scale. It indicates rather such results as would follow at the present day were the barbarian tribes of the North-west to displace the modern Minnesota miners, and possess themselves of mineral treasures they are as little capable as ever of turning to any but the most simple uses.

Such evidences, accordingly, while they serve to prove the existence, at some remote period, of a mining population in the copper regions of Lake Superior, seem also to indicate that their labours had come to an abrupt termination. Whether by some terrible devastating pestilence, like that which nearly exterminated the native population of New England immediately before the landing of the Pilgrim Fathers; or by the breaking out of war; or, as seems not less probable, by the invasion of the mineral region by a barbarian race, ignorant of all the arts of the ancient Mound-Builders of the Mississippi, and of the Miners of Lake Superior: certain it is that the works have been abandoned, leaving the quarried metal, the laboriously wrought hammers, and the ingenious copper tools, just as they may have been left when the shadows of the evening told their long-forgotten owners that the labours of the day were at an end, but for which they never returned. Nor during the centuries which have elapsed since the forest reclaimed the deserted trenches for its own, does any trace seem to indicate that a native population again sought to avail itself of their mineral treasures, beyond the manufacture of such scattered fragments as lay upon the surface.

CHAPTER IX.

ALLOYS.

THE AGE OF BRONZE—AN INTERMEDIATE COPPER AGE—NATIVE SILVER AND COPPER —TIN AND COPPER ORES—THE CASSITERIDES—ANCIENT SOURCES OF TIN—ARTS OF YUCATAN—ALLOYED COPPER AXE-BLADES—BRONZE SILVER-MINING TOOL—PERUVIAN BRONZES—NATIVE METALLURGIC PROCESSES—METALLIC TREASURES OF THE INCAS—TRACES OF AN OLDER RACE—PERUVIAN MINING OPERATIONS—THE TOLTECS AND MEXICANS—BARBARIAN EXCESSES—NATIVE GOLDSMITH'S WORK—MEXICAN METALLIC CURRENCY—DISCOVERY OF ALLOYING—EXPERIMENTAL PROCESSES—ANCIENT EUROPEAN BRONZES—TESTS OF CIVILISATION—ANCIENT AMERICAN BRONZES—THE NATIVE METALLURGIST.

THE age of bronze in the archæological history of European civilisation symbolizes a transitional stage of very partial development, and imperfect materials and arts, through which the Old World passed in its progress towards the maturity of true historic times; but the bronze period of the New World is the highest stage of its self-developed civilisation, prior to the intrusion of European arts. Whether we regard the bronze implements of Britain and the North of Europe as concomitant with the intrusion of new races, or only as proofs of the discovery or introduction of a new art pregnant with many civilizing and elevating tendencies, they constitute an important element in primitive ethnology. For a time they necessarily coincide with many monuments and works of art pertaining in character to the Stone Period; just as the stone implements and weapons still manufactured by the Indians and Esquimaux are contemporaneous with many products of foreign metallurgy, but nevertheless are the perpetuation of processes developed in a period when metallurgic arts were entirely unknown. The evidence that the British Bronze Period followed a simpler and ruder one of stone is such as scarcely to admit of challenge, independent of the *à priori* likelihood in favour of this order of succession. The question however suggests itself whether metallurgy did not find its natural beginning there, as elsewhere, in the easy working of the virgin copper, and so intercalate a Copper Age

between Europe's Stone, and its true Bronze Period. On this subject, Dr. Latham remarks, in his *Ethnology of the British Islands*, "Copper is a metal of which, in its unalloyed state, no relics have been found in England. Stone and bone first; then bronze, or copper and tin combined; but no copper alone. I cannot get over this hiatus; cannot imagine a metallurgic industry beginning with the use of alloys." It is a mistake, however, to say that no unalloyed British copper relics have been found. No very special attention has been directed hitherto to the distinction. Nearly all the earlier writers who refer to the metallic weapons and tools of ancient Mexico and Central America, apply the term "copper" to the mixed metal of which these were made; while among British and European antiquaries the corresponding relics of the Old World are no less invariably designated bronze, though in many cases thus taking for granted what analysis could alone determine. It is an error, however, that the later nomenclature of archæological periods has tended to strengthen: partly from the lack of appreciation of the importance of the argument in favour of the first use of the metals in a condition corresponding to the most primitive arts, and the discovery of scientific processes at later stages.

This peculiar interest attaches to the metallurgy of the New World, that there all the earlier stages are clearly defined; the pure native metal, wrought by the hammer without the aid of fire; the melted and moulded copper; the alloyed bronze; and then the smelting, soldering, graving, and other processes resulting from accumulating experience and matured skill. But examples of British implements of pure copper have also been noted. In a valuable paper by Mr. J. A. Phillips, on the metals and alloys known to the ancients,[1] the results of analyses of thirty-seven ancient coins and other bronzes are given. Among these are included three bronze swords, one from the Thames, the others from Ireland; a spear-head, two celts, and two axe-heads: all of types well known among the weapons of the "bronze period." Yet of these eight articles, selected as examples of "bronze" weapons, one of them, the spear-head, proved on analysis to be of impure but unalloyed copper. Its composition is given as copper, 99·71; sulphur, 28. In 1822, Sir David Brewster described a large battle-axe of pure copper, found at a depth of twenty feet in Ratho Bog, near Edinburgh, under circumstances scarcely less remarkable than some of the discoveries of works of art in the drift. It differed from all the specimens preserved in the Museum of the Scottish Antiquaries.

[1] *Mems. Chemical Society*, vol. iv. p. 288.

The workmen dug down through nine feet of moss and seven feet of sand, before they came to the hard black till-clay; and at a depth of four feet in the clay the axe was found. The author accordingly remarks: "It must have been deposited along with the blue clay prior to the formation of the superincumbent stratum of sand, and must have existed before the diluvial operations by which that stratum was formed. This opinion of its antiquity is strongly confirmed by the peculiarity of its shape, and the nature of its composition."[1] In 1850, my brother, Dr. George Wilson, undertook a series of analyses of ancient British bronzes for me, and out of seven specimens selected for experiment, one Scottish axe-head, rudely cast, apparently in sand, was of nearly pure copper.[2] Of eight specimens of metal implements selected for me by Mr. Thomas Ewbank, of New York, as examples of Peruvian bronze; four of them, on analysis, proved to be of unalloyed copper. The rich collections of the Royal Irish Academy furnish interesting confirmation of this idea of a transitional copper era. Dr. Wilde remarks, in his Catalogue of Antiquities, that "upon careful examination, it has been found that thirty of the rudest, and apparently the very oldest celts, are of red, almost unalloyed copper." In addition to those there are also two battle-axes, a sword-blade, a trumpet, several fibulæ, and some rudely formed tools, all of copper; and now that attention has been directed to the subject, further examples of the same class will doubtless accumulate.

A very important difference, however, distinguishes the mineral resources of the British and the North American copper regions. Copper, as we have seen, occurs in the trappean rocks of Keweenaw and Ontonagon, in masses of many tons weight; and detached blocks of various sizes lie scattered about in the superficial soil or exposed along the lake shore, ready for use without any preparatory skill, or the slightest knowledge of metallurgy. Nature in her own vast crucibles had carried the metal ores through all their preparatory stages, and left them there for man to shape into such forms as his convenience or simplest wants suggested. The native silver had undergone the like preparation, and is of frequent occurrence as a perfectly pure metal, being found, even when interspersed in the mass of copper, still in distinct crystals, and entirely free from alloy with it. But neither tin nor zinc occurs throughout the whole

[1] *Edinburgh Philosophical Journal*, vol. vi. p. 357.
[2] *Prehistoric Annals of Scotland*, 2d Ed., vol. i. p. 319.

northern region to suggest to the native metallurgist the production of that valuable alloy which is indissolubly associated with the civilisation of Europe's bronze age. In Britain it is altogether different. The tin and copper lie together, ready for alloy, but both occur in the state of impure ores, inviting and necessitating the development of metallurgy before they can be turned to economic uses. Tin is almost entirely obtained in Cornwall, from its peroxide; and copper occurs there chiefly combined with sulphur and iron, forming the double sulphuret which is commonly called copper pyrites or yellow copper ore. The smelting process to which it has to be subjected is a laborious and complicated one; and if we are prepared to believe in the civilisation of Britain's bronze period as a thing of native growth, the early discovery and use of alloys very slightly affects the question.

The ancient American miner of Lake Superior never learned to subject his wealth of copper to the action of fire, and transfer it from the crucible to the shapely mould. No such process was needed where it abounded in inexhaustible quantities in a pure metallic state. If he, in the midst of such readily available metallic resources, was found to have used tools of bronze or brass, to have transported the tin or zinc of other regions to his furnaces, and to have laboriously converted the whole into a preferable substitute for the simpler metal that lay ready for his use, it would be difficult indeed to conceive of such as the initial stage in his metallurgic industry. But Britain presents no analogy to this in its development of metallurgic arts. Tin, one of the least widely diffused of metals, is found there in the greatest abundance, and easily accessible, not as a pure metal, but as an ore which is readily reduced by charcoal and a moderate degree of heat to that condition. This was the metallic wealth for which Britain was sought by the ancient fleets of the Mediterranean, and on it we may therefore assume her primitive metallurgists to have first tried their simple arts. But alongside of it, and even in natural combination with it, as in tin pyrites and the double sulphuret, lies the copper, also in the condition of an ore, and requiring the application of the metallurgist's skill before it can be turned to account. We know that at the very dawn of history tin was exported from Britain. Copper also appears to have been wrought, from very early times, in North Wales as well as in Cornwall. Both metals were found rarely, and in small quantities, in a native state, but these may have sufficed to suggest the next step of supplying them in larger quantities from

the ores. To seek in some unknown foreign source for the origin of metallurgic arts, which had there all the requisite elements for evoking them, is wholly gratuitous; and, if once the native metallurgist learned to smelt the tin and copper ores, and so had been necessitated to subject them to preparatory processes of fire, the next stage in progressive metallurgy, the use of alloys, was to him an exceedingly simple one. It might further be assumed that, with the discovery of the valuable results arising from the admixture of tin with copper, the few pure copper implements—excepting where already deposited among sepulchral offerings,—would for the most part be returned to the melting-pot, and reproduced in the more perfect and useful condition of the bronze alloy. There seems, however, greater probability in the supposition that Britain never had its copper period or age of unalloyed metals, other than of a brief and transitory character.

The *cassitĕron*, or tin which made the British Islands famous among Phœnician and Greek mariners, long before the Roman legions ventured to cross the narrow seas, was derived, as has been noted, from the same south-western peninsula, where rich veins of copper are still wrought. The name of Cassiterides, or Tin Islands, bestowed on Cornwall and the adjacent isles, seems to imply that tin was the chief export, and was transported to the great Mediterranean ports, to be mixed with the copper of the Wady Maghara, and other Asiatic mines, to form the Egyptian, Phœnician, and Assyrian bronze. Tin, therefore, the easiest of all metals to subject to the requisite processes, first engaged the skill of the ingenious British metallurgist; and that mastered, the proximity of the copper ore in the same mineral districts, inevitably suggests all the subsequent processes of smelting, fusion, and alloy. But Phœnicia had learned the value of tin for the purposes of alloy before her merchantmen sought their mineral freight at the remote seaports of Cornwall and Devon. The native Briton had also acquired his independent knowledge of this metal before the Phœnician trader visited his shores; for it is inconceivable that the mineral treasures of Cornwall and Devon were first discovered by wandering mariners from the Levant. More probably their ores and metals first reached the Mediterranean through Gaul; and the fame of their mineral wealth tempted the commercial enterprise of Tyre and Sidon to explore the mysteries of northern seas.

The practical value of the alloy of copper and tin was well known both to the Phœnicians and the Egyptians. Tin occurs in

considerable abundance, and in the purest state, in the peninsula of Malacca, and thence, probably, it was first brought to give a new impetus to early eastern civilisation. Britain is its next and its most abundant source; and since America was embraced within the world's sisterhood of nations, Chili and Mexico have become known as productive sources of the same useful metal.

But the mineral wealth of Mexico and Peru was familiar to nations of the New World long before it was made to contribute to European commerce; and to the proximity of the metals best suited for the first stages of human progress, may be ascribed in part the curious phases of a native and purely aboriginal civilisation, which revealed itself to the wondering gaze of the first European adventurers who followed in the steps of Columbus. Whatever doubts may arise relative to the native origin of British metallurgy, and the works of art of the European bronze period, in consequence of their most characteristic illustrations being preserved in the mixed metal, bronze, and not in pure copper, there is no room for any such doubts relative to the primitive metallurgy of the New World. North America appears to have had its two distinct and entirely independent centres of self-originated metallurgic arts: its greatly prolonged but slight progressive Copper Period; and apart from this, and probably, in part at least, contemporaneous with it, its separate Bronze Period, with its distinct centres of more advanced civilisation, and better regulated metallurgic industry, in which the value of metallic alloys was practically understood.

The great copper region of North America, with its rich supplies of pure native metal, accessible to the rudest efforts of the aboriginal miner, has already been described. It lies along the shores of Lake Superior, and on its larger islands between the 46th and 48th parallels of north latitude; and from thence its metallic treasures were diffused by barter and primitive commercial exchanges, throughout the whole vast regions watered by the Mississippi and its tributaries; including also the Atlantic states, and the shores of the great lakes. But southward and westward of this great area of diffusion, the Rio Grande and its tributaries, with the Rio Colorado, drain a country modified by very diverse conditions of climate, and having a totally distinct southern centre of metallurgic wealth and civilizing influences. In this central region of the twin continents of America, as well as independently in tropical Peru, native civilisation had advanced a considerable way, before it was arrested and destroyed by the mercenary ag-

gressions of foreign intruders. The peculiar advantages derivable from the proximity of the distinct metals had been discovered, and metallurgy had been developed into the practical arts of a true American Bronze Age.

When Columbus, during his fourth voyage, landed on one of the Guanaja islands, before making the adjoining mainland of Honduras, it was visited by a large trading canoe, the size and freight of which equally attracted his notice. It was eight feet wide, and in magnitude like a galley, though formed of the trunk of a single tree. In the centre a raised awning covered and enclosed a cabin, in which sat a cacique with his wives and children; and twenty-five rowers propelled it swiftly through the water. The barque is believed to have come from the province of Yucatan, then about forty leagues distant, through a sea the stormy violence of which had daunted the most hardy Spanish seamen. It was freighted with a great variety of articles of manufacture, and of the natural produce of the neighbouring continent; and among them Herrara specifies "small hatchets, made of copper, small bells and plates, *crucibles to melt copper*, etc." Here, at length, was the true answer to that prophetic faith which upheld the great discoverer, when, peering through the darkness, the New World revealed itself to his eye in the glimmering torch, which told him of an unseen land inhabited by man. Here was evidence of the intelligent service of fire. Well indeed might it have been for Columbus had he been obedient to the voice that thus directed his way. All the accompaniments of the voyagers furnished evidence of civilisation. They were clothed with cotton mantles. Their bread was made of the Indian corn, and from it also they had brewed a beverage resembling beer. They informed Columbus that they had just arrived from a country, rich, populous, and industrious, situated to the west, and urged him to steer in that direction. But his mind was bent on the discovery of the imaginary strait that was to lead him directly into the Indian seas. "Well would it have been for Columbus," exclaims Washington Irving, "had he followed their advice. Within a day or two he would have arrived at Yucatan; the discovery of Mexico, and the other opulent countries of New Spain, would have necessarily followed; the Southern Ocean would have been disclosed to him, and a succession of splendid discoveries would have shed fresh glory on his declining age, instead of its sinking amidst gloom, neglect, and disappointment." Not Columbus's own future, in-

deed, but the whole future of the New World might have been changed. But it was not so to be.

When at length the mainland was reached, the abundance and extensive use of the metals became speedily apparent; and as further discoveries brought to the knowledge of the Spaniards the opulent and civilized countries of Yucatan, Mexico, and Peru, which the project of reaching the Asiatic mainland had prevented Columbus from discovering, they were more and more astonished by the native metallic wealth. When the Spaniards first entered the province of Tuspan, they mistook the bright copper or bronze axes of the natives for gold, and were greatly mortified after having accumulated them in considerable numbers to discover the mistake they had made. Bernal Diaz narrates that "each Indian had, besides his ornaments of gold, a copper axe, which was very highly polished, with the handle curiously carved, as if to serve equally for an ornament as for the field of battle. We first thought these axes were made of an inferior kind of gold; we therefore commenced taking them in exchange, and in the space of two days had collected more than six hundred; with which we were no less rejoiced, as long as we were ignorant of their real value, than the Indians with our glass beads."

Ancient Mexican paintings show that the tribute due by certain provinces of the Mexican empire was paid in wedges of copper; and Dupaix describes and figures examples of a deposit of two hundred and seventy-six axe-heads, cast of alloyed copper, such as, he observes, "are much sought by the silversmiths on account of their fine alloy." The forms of these, as well as of the chisels and other tools of bronze, are simple, and indicate no great ingenuity in adapting the moulded metal to the more perfect accomplishment of the artificer's or the combatant's requirements. The methods of hafting the axe-blade, as illustrated by Mexican paintings, are nearly all of the same rude description as are employed by the modern savage in fitting a handle to his hatchet of flint or stone; and, indeed, the whole characteristics of the metallurgic and artistic ingenuity of Mexico and Peru are suggestive of a civilisation very partially developed; though, from the nature of Peruvian institutions, the civilisation of the latter, like that of China, may have long existed, with slight and intermittent manifestations of progress. It was indeed, in many respects, the transitional Bronze Period of the New World, in which not only the arts of an elder Stone Period had been very partially superseded

or modified by metallurgic influences, but in which the sword, or *mahguahuitl*, made of wood, with blades of obsidian inserted along its edge, the flint or obsidian arrow-head and the stone hatchet and other weapons, were still in common use, along with those of metal.

Yet also such traces of primitive arts are accompanied with remarkable evidence of progress in some directions. Humboldt remarks, in his *Vues des Cordillères*, on the surprising dexterity shown by the Peruvians in cutting the hardest stones; and, after reference to the observations of other travellers, he adds :—"When I crossed the Cordillera by the Paramo of Assuay, and saw the enormous masses of stone extracted from the porphyry quarries of Pullal, employed in constructing the high roads of the Inca, I began to doubt whether the Peruvians were not acquainted with other tools besides hatchets of flint. I suspected that grinding was not the only method they had employed to smooth the stones, or give them a regular and uniform convexity; and I then adopted an opinion contrary to the ideas generally received. I conjectured that the Peruvians had tools of copper, which, mixed with a certain proportion of tin, acquires great hardness. This conjecture has been justified by the discovery of an ancient Peruvian chisel, found at Vilcabamba, near Cuzco, in a silver mine worked in the time of the Incas. This valuable instrument, for which I am indebted to the friendship of the Padre Narcisse Gilbar, is four and seven-tenth inches long, and four-fifths of an inch broad. The metal of which it is composed has been analysed by M. Vauquelin, who found in it 0·94 of copper, and 0·06 of tin." Unfortunately, the composition of Mexican and Peruvian bronzes has hitherto attracted so little attention, that it is impossible to obtain many accurate records of analyses, or to procure specimens to submit to chemical tests. Dr. J. H. Gibbon, of the United States Mint, has favoured me with the analysis of another chisel or crowbar, brought from the neighbourhood of Cuzco by his son, Lieutenant Lardner Gibbon, who formed one of the members of the Amazon Expedition. Through the kind services of Mr. Thomas Ewbank, of the American Ethnological Society, I have also obtained in addition to results determined by himself, eight specimens of Peruvian implements, though only a portion of these proved to be formed of metallic alloys. They were submitted to careful analysis by my colleague, Professor Henry Croft, and the results in reference to the bronzes are given on a subsequent page.[1] Mr. Squier, in the Appendix to his *Aboriginal*

[1] Analyses of Ancient American Bronzes, p. 200.

Monuments of the State of New York, engraves an implement found with various Peruvian knives and chisels, about the person of a mummy, taken by Mr. J. H. Blake, of Boston, from an ancient cemetery near Arica. On analysis, it proved to contain about four per cent. of tin. I have recently inspected the valuable collection of antiquities brought by Mr. Blake from Peru, including a variety of bronze implements, and he has favoured me with the following results :—"Many years ago, I made a series of analyses of bronze instruments, knives, chisels, hoes, etc., which I found in ancient cemeteries in Peru in connexion with embalmed bodies. I have not been able to find my notes made at the time ; but I know that they consisted of copper and tin only, and that the proportion of the latter varied from upwards of two to four per cent. After receiving your last letter, I made an analysis of a small knife found by me, with many other articles, with the body of a man, in the ancient cemetery near Arica, in South Peru. The handle is of the same metal as the blade, and at right angles with it, being joined at the middle. The end is fashioned to represent the head of a llama. On analysis, the composition proves to be: Copper, 97·87; tin, 2·13." Dr. C. T. Jackson communicated another analysis of a "Chilian bronze instrument, probably a crowbar," to the Boston Natural History Society. It contained 7·615 parts of tin, and is described by him as a bronze, well adapted for such instruments as were to be hammer-hardened.[1] The general result of the whole is to indicate a variable range of the tin alloy, from 2·13 to 7·615 per cent. ; which, in so far as any general inference can be drawn from so small a number of examples, shows a more indeterminate and partially developed metallurgy than the analyses of primitive European bronzes disclose.

Such is all the evidence I have been able to obtain relative to the composition of Peruvian alloys, and the progress indicated thereby in scientific metallurgy. It is insufficient for any positive generalization ; but, so far as it goes, it fully accords with the ideas otherwise formed of the Peruvians as a people who had discovered for themselves the rudiments of civilisation, but who had as yet very partially attained to any mastery of the arts which have been matured in modern centuries for Europe. This accords with the description furnished by Dr. Tschudi of some of the metallurgic processes still practised in Peru. "The Cordillera, in the neighbourhood of Yauli," he remarks, "is exceedingly rich in lead ore,

[1] *Proceedings, B. N. H. S.*, vol. v. p. 63.

containing silver. Within the circuit of a few miles above eight hundred shafts have been made, but they have not been found sufficiently productive to encourage extensive mining works. The difficulties which impede mine-working in these parts are caused chiefly by the dearness of labour and the scarcity of fuel. There being a total want of wood, the only fuel that can be obtained consists of the dried dung of sheep, llamas, and huanacos. This fuel is called *taquia*. It produces a very brisk and intense flame, and most of the mine-owners prefer it to coal. The process of smelting, as practised by the Indians, though extremely rude and imperfect, is adapted to local circumstances. All European attempts to improve the system of smelting in these districts have either totally failed, or in their results have proved less effective than the simple Indian method. The Indian furnaces can, moreover, be easily erected in the vicinity of the mines, and when the metal is not very abundant the furnaces may be abandoned without any great sacrifice. For the price of one European furnace the Indians may build more than a dozen, in each of which, notwithstanding the paucity of fuel, a considerably greater quantity of metal may be smelted than in one of European construction." At the village of Yauli, near the mines referred to, situated at an elevation of 13,100 feet above the sea, from twelve to fourteen thousand Indians are congregated together, chiefly engaged in mining, after the fashion handed down to them from generations before the Conquest. Their processes correspond with the imperfect results disclosed by the analysis of native alloys; as well as by other proofs that the Peruvians were accustomed to work the native copper into tools and personal ornaments for common use, very much in the same fashion as the ancient metallurgist of the Ohio valley, to whom the processes of smelting and alloying were wholly unknown.

The contrast which the civilisation alike of Mexico and Peru presents, when compared with the highest arts pertaining to any of the tribes of North America, is well calculated to excite surprise and admiration. But the wonder of the Spanish conquerors at their gems and gold, the ready credulity of the missionary priests in their anxiety to magnify the gorgeous paganism which they had overthrown, and the patriotic exaggeration of later chroniclers of native descent, have all tended to overdraw the picture of the beneficent despotism of the Incas of Peru; or the crueller but not less magnificent rule of the Caciques of Mexico. With a willing credulity Spanish historians perpetuated what the Peruvian Garcilasso and

the Mexican Ixtlilxochitl related, in their adaptations of native history and traditions to European conceptions. Religious, political, and social analogies to European ideas and institutions, accordingly, strike the modern student with wonder and admiration; nor has the gifted author of the *Conquests of Mexico and Peru* always sufficiently discriminated between the glowing romances begot by an alliance between the barbarous magnificence of a rude native despotism and the associated ideas of European institutions. The metallic treasures of the Incas of Peru are probably not exaggerated; and if so, the precious metals with which their palaces and temples were adorned would have been the index in any European capital of a wealth sufficient to employ the merchant-navies of Venice, Holland, or England in the commerce of the world. But in Peru this was the mere evidence of the abundance of the precious metals in a country where they were as little the representatives of a commercial currency as the feathers of the coraquenque, which were reserved exclusively for the decoration of royalty.

The Peruvians occupied a long extent of sea-coast, but no commercial enterprise tempted them to launch their navies on the Pacific, excepting for the most partial coasting transit. The great mass of the people patiently wrought to produce from their varied tropical climates and fertile soil the agricultural produce on which the entire community depended; resembling in this—as well as in their vast structures wrought by a patiently submissive people at the will of their absolute rulers,—the great oriental despotisms when in their earliest and least licentious forms. Their own traditions traced the dawn of their government no further back than the twelfth century; and the characteristics of their imperfect and unequally developed civilisation confirm the inference that they have not in this respect departed from the invariable tendency of historic myth and tradition to exaggerate the national age. Extensive ruins still existing on the shores of Lake Titicaca are affirmed by the Peruvians to have existed before the Incas arrived. But slight importance can be attached to the traditions of an unlettered people concerning events of any kind dating four or five centuries back. The authority of Bede is of little value relative to Jute or Anglo-Saxon colonization less than three centuries before his time; and the modern New Englander, with deeds and parchments, as well as abundance of printed history to help his tradition, cannot make up his mind as to whether the famous Newport Round Tower was built by a Norse viking of the eleventh, or a New

England miller of the seventeenth century. "No account," says Prescott, "assigns to the Inca dynasty more than thirteen princes before the Conquest. But this number is altogether too small to have spread over four hundred years, and would not carry back the foundations of the monarchy, on any probable computation, beyond two centuries and a half—an antiquity not incredible in itself, and which, it may be remarked, does not precede by more than half a century the alleged foundation of the capital of Mexico." Humboldt, in his *Vues des Cordillères*, indicates the borders of Lake Titicaca, the district of Callao, and the high plains of Tiahuanaco, as the theatre of ancient American civilisation; and Prescott, in view of the apparently recent origin of the Incas, assumes that they were preceded in Peru by another civilized race, which, in conformity with native traditions, he would derive from this same cradle-land of South American arts. Beyond this, however, he does not attempt to penetrate into that unchronicled past. Who this people were, and whence they came, may afford a tempting theme for inquiry to the speculative ethnologist; but it is a land of darkness that lies beyond the domain of history. The same mists that hang round the origin of the Incas continue to settle on their subsequent annals; and so imperfect were the records employed by the Peruvians, and so confused and contradictory their traditions, that the historian finds no firm footing on which to stand till within a century of the Spanish conquest.

In reality only a very small portion of what is called Peruvian history prior to that conquest can be regarded as anything but a historical romance; and the exaggerated conceptions relative to the completeness and consistent development alike of Peruvian and Mexican native civilisation, are based on the old axiom which has so often misled the archæologist, *ex pede Herculem.*

Viewed, however, without exaggeration, the progress in mechanical skill and artistic ingenuity attained by both of the semi-civilized American nations, is very remarkable. The huacas or tombs of the Incas, and also their royal and other depositories of treasure, have disclosed many specimens of curious and elaborate metallurgic skill: bracelets, collars, and other personal ornaments of gold, vases of the same abundant precious metal, and also of silver; mirrors of burnished silver, as well as of obsidian; finely adjusted balances made in silver; bells both of silver and bronze; and numerous commoner articles of copper, or of the more useful alloy of copper and tin, of which their tools were chiefly made.

The Peruvian mining operations fully accorded with the partial development of their civilisation in other respects. "Gold," says Prescott, "was gathered by the Incas from the deposits of the streams. They extracted the ore also in considerable quantities from the valley of Curimayo, north-east of Caxamarca, as well as from other places; and the silver mines of Porco, in particular, yielded them considerable returns. Yet they did not attempt to penetrate the bowels of the earth by sinking a shaft, but simply excavated a cavern in the steep sides of the mountain, or at most opened a horizontal vein of moderate depth. They were equally deficient in the knowledge of the best means of detaching the precious metal from the dross with which it was united, and had no idea of the virtues of quicksilver—a mineral not rare in Peru,—as an amalgam to effect this decomposition. Their method of smelting the ore was by means of furnaces built in elevated and exposed situations, where they might be fanned by the strong breezes of the mountains. The subjects of the Incas, in short, with all their patient perseverance, did little more than penetrate below the crust, the outer rind as it were, formed over those golden caverns which lie hidden in the dark depths of the Andes."[1] The treasures thus acquired served to enkindle with a useless blaze of barbaric gold their temples and palace-halls; but the metallurgic skill which had already taught them to harden the abundant copper with its tin alloy, is the more promising index of their immature civilisation.

But while the arts of civilisation were thus being fostered on those southern plateaux of the Andes, another seat of native American civilisation had been founded on the corresponding plateaux of the northern continent, and the Aztecs were building up an empire even more marvellous than that of the Incas. The site of the latter is among the most remarkable of all the scenes consecrated to memories of the birth of civilisation. On the lofty table-land which lies between the Gulf of Mexico and the Pacific Ocean, at an elevation of nearly seven thousand five hundred feet, the valley of Mexico lies engirdled by its ramparts of porphyritic rock, like a vast fortress provided by nature for guarding the infancy of American civilisation. Here was the scene of the heroic age of Toltec Art, where the foundations of all later progress were laid, and architecture achieved its earliest triumphs in the New World on the temples and towers of Tula, the ruined remains of which

[1] *Conquest of Peru*, book i. chap. v.

attracted the attention of the Spaniards at the time of the Conquest. But the history of the Toltecs and their ruined edifices stands on the border lines of romance and fable, like that of the Druid builders of Carnac and Avebury. To them, according to tradition and such historical evidence as is accessible, succeeded their Aztec or Mexican supplanters, along with the Acolhuans, or Tezcucans, as they were latterly called from their capital Tezcuco. On the opposite shores of the same Mexican lake, the largest of five inland waters that diversified the surface of that great table-land valley, stood Tezcuco and Mexico, the capitals of the two most important states within which the native civilisation of the North American continent developed itself. From the older Toltecans, the encroaching Tezcucans are believed to have derived the germs of that progress, which is best known to us in connexion with the true Aztec or Mexican state. Legends of the golden age and heroic races of Anahuac abound, and have been rendered into their least extravagant forms by the patriotic zeal of Ixtlilxochitl, a lineal descendant of the royal line of Tezcuco. But the true Mexicans are acknowledged to be of recent origin, and the founding of Mexico—with rites as rude and primitive as those of the Veneti refugees when inaugurating the Queen of the Adriatic,—is assigned to A.D. 1326. But the founders of Tenochtitlan, as the new capital was called, were a vigorous, enterprising, and ferocious race. The later name of Mexico was derived from the Aztec war-god Mexitli, whose favours to his Aztec votaries enabled them to build up a powerful state by conquest, to enrich themselves with spoil, and to replace the rude fabrics of their city's founders with substantial and ornate structures of stone.

Whatever gloze of mild paternal absolutism may linger around our conceptions of the prehistoric chronicles of Peru, a clearer light illuminates the harsh realities of Mexican sovereignty. The god of war was the supreme deity of the Aztecs, worshipped with hideous rites of blood. Their civil and military codes, according to the narrative of their conquerors, were alike cruel as that of Draco; and their religious worship was a system of austere fanaticism, and loathsome butchery and cannibalism, which seemed to refine the merciless cruelties of the Red Indian savage into a ritual service fit only for the devil. But besides their hideous war-god, the Mexican mythology was graced by a beneficent divinity, Quetzalcoatl, the instructor of the Aztecs in the use of metals, in agriculture, and in the arts of government. This and similar

elements of Mexican mythology have been regarded as traces of a milder faith inherited by the Mexicans from their Toltecan predecessors, and on which they engrafted their own incongruous creed of unmitigated ferocity. The idea is one supported by many probabilities, as well as by some evidence. The early history of the Northmen, however, in which we witness the blending of a rich poetic fancy, wherein lay the germ of later Norman romance and chivalry, with cruelties pertaining to a creed little less bloody than that of the Mexican warrior, shows that no such theory is needed to account for the incongruities of the religious system of the Aztecs. In truth, the ferocity of a semi-barbarous people is often nothing more than its perverted excess of energy; and—as has been already noted in reference to the Caribs,—is more easily dealt with, and turned into healthful and beneficent action, than the cowardly craft of the docile slave. It is only when such hideous rites are consciously engrafted on the usages of a people already far in advance of such a semi-barbarous childhood—as in the Spanish adoption of the Inquisition at the commencement of its modern history,—that they prove utterly baneful, because the nation is already past that stage of progress in which it would naturally outgrow them.

Hideous, therefore, as were the human sacrifices, with their annual thousands of victims; the offerings of infants to propitiate Tlaloc, their rain-god; and the loathsome banquets on the bodies of their sacrificed victims:—if indeed this be not an exaggeration of Spanish credulity and fanaticism;—it is nevertheless difficult to concur in the verdict of the gifted historian of *The Conquest of Mexico*, that "it was beneficently ordered by Providence that the land should be delivered over to another race who would rescue it from the brutish superstitions that daily extended wider and wider, with extent of empire." The rule of the conquerors, with their Dominican ministers of religion, was no beneficent sway; and its fruits in later times have not proved of such value as to reconcile the student of that strange old native civilisation of the votaries of Quetzalcoatl, to its abrupt arrestment, at a stage which can only be paralleled by the earliest centuries of Egyptian progress.

Metallurgic arts were carried in some respects further by the Mexicans than by the Peruvians. Silver, lead, and tin were obtained from the mines of Tasco, and copper was wrought in the mountains of Zacotollan, by means of galleries and shafts opened

with persevering toil where the metallic veins were embedded in the solid rock; and there, as at the Lake Superior copper regions, the traces of such ancient mining have proved the best guides to modern searchers for the ores. The arts of casting, engraving, chasing, and carving in metal were all practised with great skill. Vessels both of gold and silver were wrought of enormous size: so large, it is said, that a man could not encircle them with his arms; and the abundant gold was as lavishly employed in Mexico as in Peru, in the gorgeous adornment of temples and palaces. Ingenious toys, birds and beasts with movable wings and limbs, fish with alternate scales of silver and gold, and personal ornaments in great variety, were wrought by the Mexican goldsmiths of the precious metals, with such curious art, that the Spaniards acknowledged the superiority of the native workmanship over anything they could achieve. When Cortes first entered the capital of Montezuma in 1513, the Mexican Emperor received him in the palace built by his father Axayacatl, and hung round his neck a decoration of the finest Mexican workmanship. The shell of a species of craw-fish, set in gold, formed the centre, and massive links of gold completed the collar, from which depended eight ornaments of the same metal, of delicate workmanship, wrought in imitation of the prized shell-fish.

The arts thus practised on the great plateau extended to the most southern limits of the North American continent. The huacas, or ancient graves of the Isthmus of Panama, have been ransacked by thousands in recent years, from the temptation which the gold relics they contain hold out to their explorers. These include representations of beasts, birds, and fishes, frogs, and other objects, imitated from nature, often with great skill and ingenuity. One gold frog which I examined had the eyes hollow, with an oval slit in front, and within each a detached ball of gold, which appeared to have been executed in a single casting. This insertion of detached balls is frequently met with in the pottery, as well as in the goldsmith's work of the Isthmus, and is singularly characteristic of a peculiar phase of local art. Human figures, and monstrous or grotesque hybrids, with the head of the cayman, the eagle, and other animals, attached to the human form, are also found in the same graves, wrought in gold; but, so far as my own opportunities of observation enable me to judge, the human figure generally exhibits inferior imitative skill and execution to the representations of other animate subjects. But all alike display abundant metal-

lurgic art. Soldering as well as casting was known to the ancient goldsmith, and the finer specimens have been finished with the hammer and graving-tool. Judging from the condition of the human remains found in those huacas of the peninsula, they are probably of a much higher antiquity than the era of Mexican civilisation; and, lying as they do in the narrow isthmus between the twin continents, they suggest the probability of a common source for the origin of Peruvian and Aztec arts.

But while the Mexicans wrought their ingenious toys, and lavished their inexhaustible resources of gold and silver in personal decoration, and adorned their public edifices with scarcely less boundless profusion than the Peruvians, they had learned to some extent the practical value of gold and other metals as a convenient currency. By means of this equivalent for the gold and silver coinage of Europe, the interchange of commodities in the great markets of Mexico was facilitated, and an important step in the progress towards a higher stage of civilisation secured. This metallic currency consisted of pieces of tin cut in the form of a T or stamped with a similar character, and of transparent quills filled with gold dust. These were apparently regulated to a common standard by their size: for the use of scales and weights, with which the Peruvians were familiar, appears to have been unknown in Mexico.

The nature of the Mexican metallic currency fully accords with the knowledge and experience of a people among whom metallurgic arts were of comparatively recent origin. The easily fused tin, and the attractive and accessible gold-dust, supplied ready materials for schooling an ingenious people in the use of the metals. Copper was probably first employed when found in a pure metallic state, as among the old miners of Lake Superior; while the art of fusing, taught by the Aztec Tubal-Cain, was tried only on the readily-yielding tin. By this means the arts of smelting and moulding the metallic ores would be acquired, and applied to copper, silver, and gold, as well as to tin. Accident might suggest the next important stage, that of metallic alloys; but under the circumstances alike of Peruvian and Mexican civilisation, progressing in regions abounding with the most attractive and easily-wrought metals, it is easy to conceive of the independent discovery of the useful bronze alloy. Yet by the standard composition of their bronze, far more than by the ingenious intricacy of their personal ornaments, utensils, and architectural decorations, may fairly be tested the actual progress alike

of the Incas or of the Aztecs. The delight of the savage in personal adornment precedes even the most needful covering of his nakedness, and the same propensity long monopolizes the whole inventive ingenuity of a semi-barbarous people; while the useful bronze tools embody the true germs of incipient civilisation. Tested by such a standard, the metallurgic arts of Peru furnish evidence of very partial development, and suggest the probability that its latest stage did not pertain to any period very remote from the era of European discovery.

The alloy of copper and tin, when destined for practical use in manufacture, is found to possess the most serviceable qualities when composed of about ninety per cent. of copper to ten of tin; and so near is the approximation to this theoretical standard among the bronze relics of the ancient world, that the archæologists of Europe have been divided in opinion as to whether they should assume a Phœnician or other common origin for the weapons, implements, and personal ornaments of that metal found over the whole continent; or that the mixed metal, derived from a common centre, was manufactured in the various countries of Europe into the objects of diverse form and pattern abounding in their soil, and deposited among their sepulchral offerings. That the former idea of a common origin for the finished implements is untenable, has been proved, alike by numerous discoveries of moulds, of the prepared metal, and even of the furnaces where the bronze worker practised his ingenious art; and also by the varieties in form and style of ornament, by which the bronze relics of different countries of Europe, manifestly belonging to the same period, are distinguishable. The idea of the bronze itself having been all derived from some common source is, in like manner, rendered improbable by a more careful investigation of the evidence on which it has been founded.[1]

The reasons for some general approximation to a constant proportion in the constituents of European bronze, when designed for tools and weapons, are well illustrated by the report of a series of synthetic experiments communicated by Dr. George Pearson, to the Royal Society of London in 1796. Having determined by analysis the relative proportions of copper, tin, and other metals present in various Roman and British bronze relics, he next proceeded to fuse the first two in various united proportions, beginning with one part of tin to twenty parts of copper, which produced a dark-

[1] *Vide Prehistoric Annals of Scotland*, 2d Ed. vol. i. pp. 352, 372.

coloured bronze, with a fracture inclining in colour to the peculiar red of the pure copper. On reducing the constituents to fifteen parts of copper to one of tin, the colour was materially affected; the red copper hue was no longer seen when the product was fractured, but an alloy of greater strength was produced. The experiments were continued with twelve, ten, nine, eight, and seven parts of copper to one of tin; and when the last fusion of the metals was tested, the increase in hardness and brittleness became very apparent. The same characteristics were still more marked on successively reducing the proportions of copper to six, five, four, and three; and when an alloy was made of two parts of copper to one of tin, it was, according to Dr. Pearson's report, as brittle as glass.

Here we see at a glance the whole process pursued by the old worker in bronze. Accident, or the natural proximity of the metals or ores, as they occur in the mineral regions of Southern England, may have furnished the first disclosure of the important secret. But that once discovered, the subsequent steps were inevitable. Having ascertained that he could produce a harder and more useful compound than the pure copper by alloying it with tin, he would not fail to diminish the proportions of the latter till he had obtained a sufficiently near approximation to the best bronze, to answer the practical purposes for which it was designed. No intercourse or interchange of experience was necessary to lead the isolated metallurgist of the remotest regions to the same results when dealing with these metals with similar objects in view; nor would a closer correspondence between the proportionate ingredients of the native American and European bronze than has yet been detected, indicate more than similar aims, and the inevitable experience consequent on the properties of the varying alloy, leading to corresponding results.

The following table of the compositions detected by analyses in various ancient European bronze relics will suffice to show how little foundation there is for the assumption of a Phœnician, British, or any other common origin for the alloy of which they were made; and the corresponding evidences of proportionate ingredients disclosed by analyses of native American bronzes, equally disprove the theory of any European or other foreign source for the metallurgic arts of the New World.

ANALYSES OF ANCIENT BRONZES.

No.			Copper.	Tin.	Lead.	Iron.	Silver.
1.	Caldron,	Berwickshire,	92·89	5·15	1·78	...	...
2.	Sword,	Duddingston,	88·51	9·30	2·30	...	...
3.	Kettle,	Berwickshire,	88·22	5·63	5·88	...	...
4.	Axe-head,	Mid-Lothian,	88·05	11·12	0·78	...	...
5.	Caldron,	Duddingston,	84·08	7.19	8·53	...	...
6.	Palstave,	Fifeshire,	81·19	18·31	0·75	...	...
7.	Vessel,	Ireland,	88·	12·	...	...	...
8.	Wedge,	,,	94·	5·09	...	0·01	...
9.	Sword,	,,	88·63	8·54	2·83	...	...
10.	Sword,	,,	83·50	5·15	8·35	3·00	...
11.	Lituus,	Lincolnshire,	88·	12·	...	...	...
12.	Roman patella,	,,	86·	14·	...	...	...
13.	Spear-head,	,,	86·	14·	...	...	...
14.	Scabbard,	,,	90·	10·	...	...	...
15.	Axe palstave,	Cumberland,	91·	9·	...	...	...
16.	Axe-head,	,,	88·	12·	...	...	...
17.	Vessel,	Cambridgeshire,	88·	12·	...	...	...
18.	Axe-head,	Ireland,	91·	9·	...	...	...
19.	Sword,	Thames,	89·69	9·58	...	0·33	...
20.	Sword,	Ireland,	85·62	10·02	...	0·44	...
21.	Celt,	,,	90·68	7·43	1·28	...	...
22.	Axe-head,	,,	90·18	9·81	...	...	...
23.	Axe-head,	,,	89·33	9·19	...	...	...
24.	Celt,	,,	83·61	10·79	3·20	0·58	...
25.	Celt,	King's Co., Ireland,	85·23	13·11	1·14	...	...
26.	Drinking-horn,	,, ,,	79·34	10·87	9·11	...	...
27.	Celt,	Co. Cavan, ,,	86·98	12·57	...	...	0·37
28.	Celt,	,,	98·74	1·09	...	0·08	0·06
29.	Celt,	Co. Wicklow, ,,	88·30	10·92	0·10	...	...
30.	Celt,	Co. Cavan, ,,	95·64	4·56	0·25	...	0·02
31.	Spear-head,	,,	86·28	12·74	0·07	0·31	...
32.	Spear-head,	,,	84·64	14·01	...	...	...
33.	Scythe,	Roscommon, ,,	95·85	2·78	0·12	1·32	...
34.	Sword-handle,	,,	87·07	8·52	3·37	...	...
35.	Sword,	,,	87·94	11·35	0·28	...	...
36.	Dagger,	,,	90·72	8·25	0·87	...	...
37.	Chisel,	,,	91·03	8·39	...	...	...
38.	Caldron,	,,	88·71	9·46	1·66	0·03	...
39.	Sword,	France,	87·47	12·53	...	...	...

Nos. 1-6. Dr. George Wilson.
7-8. Dr. J. H. Gibbon, U.S. Mint.
9-10. Professor Davy.
11-18. Dr. Pearson, *Philosoph. Trans.* 1796.
19-24. J. A. Philips, *Mem. Chem. Soc.*, iv. p. 288.
25, 26. Dr. Donovan, *Chem. Gazette*, 1850, p. 176.
27-38. Mr. J. W. Mallet, *Transactions R. I. A.* vol. xxii. p. 325.
39. Mongez, *Mém. de l'Institut.*

In No. 31 is also Cobalt, ·09; in No. 37, Antimony, ·04; and in No. 41, Arsenic, ·03.

From the varied results which so many independent analyses disclose, ranging as they do from 79 to 98 per cent. of copper; besides the variations in nature as well as quantity of the ingredients, it is abundantly obvious that no greater uniformity is traceable, than such as might be expected to result from the operations of isolated metallurgists, very partially acquainted with the chemical properties of the standard alloy, and guided for the most part by the practical experience derived from successive results of their manufacture.

When destined for other uses than such tools and weapons as those already referred to, the composition of bronze is considerably varied. The bronze of French cannons is composed of 100 copper to 11 tin; while for bell-metal it is only 80 per cent. of copper, to tin 10, zinc 5·6, lead 4·4; and for speculum metal, where a hard alloy, susceptible of the finest polish, is the chief requisite, while extreme brittleness is of no moment, the copper is reduced to about 66 per cent. to 34 of tin.

We thus perceive how the various exigencies of the metallurgist, under the control of a very ordinary amount of practical skill, would gradually lead to the discovery of the best proportions for this useful alloy; though it would only be after the accumulated fruits of isolated experiment had been combined as the experience of an advanced condition of civilisation, that anything more than some crude approximation to the best composition of the alloy would be determined. Hence the value of analytical evidence in determining the degree of civilisation of Mexico and Peru, as indicated by their metallurgic arts. For the general requirements of a tool, or weapon of war, where a sufficient hardness must be obtained, without any great liability to fracture, the best proportions proved to be about 90 per cent. of copper to 10 of tin; or with a small proportion of lead in lieu of part of the tin: which further experience taught the primitive worker in bronze communicated to his cutting instrument a greater degree of toughness, and consequently diminished its liability to fracture. But where great hardness was the chief requisite, as in certain engraving, carving, and gem-cutting tools, the mere increase of tin in the alloy supplied the requisite quality: until, carried to excess, the metallurgist was warned of his error by the excessive brittleness of the product. In this, I doubt not, lies the whole secret of Mexican and Peruvian metallurgy which has seemed so mysterious, and therefore so marvellous to the most sagacious inquirers. "It is worthy of remark," says Prescott,

"that the Egyptians, the Mexicans, and the Peruvians, in their progress towards civilisation, should never have detected the use of iron, which lay around them in abundance, and that they should each, without any knowledge of the other, have found a substitute for it in such a curious composition of metals as gave their tools almost the temper of steel; a secret that has been lost, or, to speak more correctly, has never been discovered by the civilized European."[1] Bearing in remembrance the synthetic results already referred to, the following table will supply a partial contribution towards the requisite data for testing the skill of the native American metallurgist; and probably a clue also to the supposed secret of his curious art.

ANALYSES OF ANCIENT AMERICAN BRONZES.

No.		Copper.	Tin.	Iron.
1.	Chisel from silver mines, Cuzco,	94·	6·	
2.	Chisel from Cuzco, . . .	92·385	7·615	
3.	Knife from grave, Atacama, .	97·87	2·13	
4.	Knife ,, ,, .	96·	4·	
5.	Crowbar from Chili, . . .	92·385	7·615	
6.	Knife from Amaro, . . .	95·664	3·965	0·371
7.	Perforated axe, . . .	96·	4·	
8.	Personal ornament, Truigilla, .	95·440	4·560	
9.	Bodkin from female grave, do.,	96·70	3·30	

Nos. 1. Humboldt.
2. Dr. J. H. Gibbon.
3, 4. J. H. Blake, Esq.

Nos. 5. Dr. T. C. Jackson.
6, 7. Dr. H. Croft.
8, 9. T. Ewbank, Esq.

The comparison of this with the previous table indicates a smaller amount of tin in the American bronze than in that of ancient Europe. For some Egyptian spear-heads Gmelin gives, copper 77·60, tin 22·02; and ancient weapons, armour, vessels, and coins, indicate such varied proportions as imply the results of experience in adapting the alloy for the specific purpose in view. A much larger number of analyses would be desirable as data from which to generalize on the metallurgic skill developed independently by native American civilisation; but the examples adduced here are sufficient to show that there is no lost secret for Europe to discover.

The native metallurgist had learned the art of alloying his soft and ductile copper with the still softer tin, and producing by their

[1] Prescott's *Conquest of Peru*, book i. chap. v.

chemical admixture a harder, tougher metal tha er. But he does not appear to have carried his observation so far as to ascertain the most efficient proportions of the combining metals, or even to have made any very definite approximation to a fixed rule, further than to use with great moderation the alloying tin. He had discovered, but not entirely mastered, a wonderful secret, such as in the ancient world had proved to lie on the threshold of all other and higher truths in mechanical arts. He was undoubtedly advancing, slowly but surely, on the direct course of national elevation; and the centuries which have followed since the conquests of Cortes and Pizarro might have witnessed in the New World triumphs not less marvellous in the progress of civilisation than those which distinguish the England of Victoria from that of the first Tudors. But it was otherwise decreed. The conquests of native science and art were abruptly arrested by the Spanish conquistadors; and it is difficult to realize the conviction that either Mexico or Peru has gained any adequate equivalent for the irreparable loss which thus debars us from the solution of some of the most interesting problems connected with the progress of the human race. Amid all the exclusiveness of China, and the isolation of Japan, there is still an unknown quantity among the elements of their civilisation derived from the same sources as our own. But the America of the fifteenth and sixteenth centuries was literally another world, guarded almost as securely from foreign influences as the planets that move around us in their fixed orbits, members of the same solar system with ourselves. Yet while all is novel and self-originated, we meet everywhere with affinities to the arts of man elsewhere, and trace out the processes by which he has been guided, from the first promptings of a rational instinct, to the intelligent development of many later steps of reason and experience. The progress hitherto noted has dealt chiefly with the tools of the workman. In succeeding chapters we shall now consider some of his most characteristic works.

CHAPTER X.

THE MOUND-BUILDERS.

EARTH-PYRAMIDS—THE MISSISSIPPI VALLEY—ITS RIVER NAVIGATION—MONUMENTS OF THE MOUND-BUILDERS—CONDITION OF THE RACE—SEATS OF ANCIENT POPULATION—DIFFERENT CLASSES OF WORKS—ANCIENT STRONGHOLDS—FORT HILL, OHIO—FORT ANCIENT—IROQUOIS STRONGHOLDS—FORTIFIED CIVIC SITES—SACRED ENCLOSURES—THE NEWARK WORKS—GEOMETRICAL GROUPS—PROPORTIONATE SCALE OF PARTS—STANDARD OF MEASUREMENT—THE CINCINNATI TABLET—A GEOMETRICAL INSTRUMENT—TRACES OF EXTINCT ARTS.

THE labours of a zealous and indefatigable phalanx of American archæologists have accumulated a valuable amount of materials illustrative of the history of primeval architecture, as it exists in the form of earthworks over a wide extent of the New World. Notwithstanding some fine mountain ranges which diversify the landscape, the general character of the United States presents, in its great levels and gentle undulating contour, a singular contrast to the physical aspects of the European continent; and to this natural character of its scenery may be ascribed the multiplication of those earth-pyramids which have suggested the designation of Mound-Builders, applied to its ancient population. The great pyramid of Suphis transferred from its far-receding plain, to an Italian or Swiss valley, backed by the lofty Apennines or the towering peaks of the Alps, would appear as incongruous and insignificant as Silbury Hill under the shadow of Ben Nevis, or the Great Mound at Miamisburg, among the green mountains of Vermont. An instinctive perception of the harmonies of nature and art guides all primitive builders in the development of native architecture. It is only in such a strange condition of exotic social life as that which now pervades the ancient sites of the Mound-Builders, that the Egyptian propylæum, the Greek temple, and the Gothic cathedral, are adopted at random, and without a sense of incongruity, either in relation to the climate or their special fitness: alike for churches, courts of justice, hospitals, or criminal strongholds.

The question as to whether the pyramidal earthworks of the Mound-Builders originated among native occupants of the great river-valleys of North America, or are only ruder reproductions of an architecture which had its birth in tropical Mexico, under the shadow of the Andes, may have a considerable influence on the decision of other questions relating to primitive American ethnology. Under any circumstances, however, the physical geography of a country necessarily exercises an influence on its history; and the singular aspect of the widely-extended region throughout which the earthworks have been traced, is a feature of no slight importance in its bearing on our present inquiries. Mr Charles Ellet,[1] when surveying the Mississippi Valley, with a view to the facilities which its natural advantages and capabilities afford for modern enterprise, describes the region lying between the Great Lakes and the Gulf of Mexico, and extending from the Atlantic to the Rocky Mountains, as consisting of a system of great plains. Along one of these, inclining gently towards the east, flow all the streams that enter the Lower Mississippi and the Gulf of Mexico, from the west. Another plain, of nearly equal extent, and corresponding inclination, descends from the north, along which flow the northern tributaries of the Ohio and the Mississippi itself, until it unites with the Missouri; while another plain, descending from the summit of the Alleghany range, is drained by the waters of the Cumberland and Tennessee, and all the southern tributaries of the Ohio, and intersects the great plain from the north in the valley of the Ohio, and the great plain from the west in the valley of the Lower Mississippi. After further noting the spread of another of those plains from the Alleghany mountains to the Atlantic coast, Mr. Ellet adds: "The word *plain* is adopted here for the convenience of description only, and is not to be received in a literal sense. These great surfaces are furrowed by valleys, and relieved in places by hills and even mountains; yet these mountains are of inconsiderable extent compared with the vast area of the regions described, and rest upon the great slopes which descend from the dividing ranges."

Along the broad levels drained by the numerous tributaries of this vast river-system, the traces of America's allophylian population abound; and on the banks of the Ohio and its tributaries

[1] "Of the Physical Geography of the Mississippi Valley, with Suggestions for the Improvement of the Navigation of the Ohio and other rivers," by C. Ellet, Jun., C.E. *Smithsonian Contributions*, vol. ii.

many remarkable monuments have been brought to light. The capabilities of this region for modern settlement and the abundant development of a comprehensive commercial enterprise, are the same which made it anciently the resort of a numerous settled population. "In tracing the Ohio to its source," Mr. Ellet remarks, "we must regard the Alleghany as its proper continuation. This noble tributary rises on the borders of Lake Erie, at an average elevation of 1300 feet above the surface of the sea, and nearly 700 feet above the level of the lake. The plain along which this river flows is connected with no mountain range at its northern extremity, but continues its rise, with great uniformity, from the mouth of the Ohio to the brim of the basin which encloses Lake Erie. The sources of the tributary streams are generally diminutive ponds, distributed along the edge of the basin of Lake Erie, but far above its surface, and so slightly separated from it that they may all be drained with little labour down the steep slope into that inland sea. From these remote sources a boat may start with sufficient water, within seven miles of Lake Erie, in sight sometimes of the sails which whiten the approach to the harbour of Buffalo, and float securely down the Connewango, or Cassadaga, to the Alleghany, down the Alleghany to the Ohio, and thence uninterruptedly to the Gulf of Mexico. In all this distance of 2400 miles, the descent is so uniform and gentle, so little accelerated by rapids, that when there is sufficient water to float the vessel, and sufficient power to govern it, the downward voyage may be performed without difficulty or danger in the channels as they were formed by nature; and a return trip might be made with equal security and success with very little aid from art." Here, therefore, is one of the great modern centres towards which population, agricultural enterprise, commerce, and wealth, all flow; and it is a subject of lively interest to investigate the traces which disclose to us the proof that this vast area is not now, for the first time, being rescued from the primeval forest, with its wild fauna, and still wilder savage man; but that here, in older centuries, busy industry, ingenious arts, and civic and military enterprise, made it the scene of stirring events that only wanted their Homer or Herodotus to make the epos of the Ohio more interesting for us than the legends of the Scamander or the mythic traditions of the Nile.

In a country such as this, attracting its multiplying population to the broad alluvial terraces overlooking its smoothly-flowing rivers, it was natural that the building instinct of man should first

employ itself on earthworks; and that the monument, dedicated to the patriarchal leader or sovereign chief, like the architecture of the primeval builder on the plain of Shinar, should be a pyramid "whose top may reach unto heaven." The great mound of Miamisburg, Ohio, is sixty-eight feet high, and eight hundred and fifty-two feet in circumference at its base. The more famous Grave Creek Mound of Virginia rises to a height of seventy feet, and measures at its base one thousand feet in circumference. Other and still larger earthworks have been noted, such as the truncated pyramid at Cahokia, Illinois, which occupies an area upwards of two thousand feet in circumference, and rears its level summit, of several acres in extent, to a height of ninety feet. But this last belongs to a different class from the sepulchral mounds which appear to be unsurpassed by any known works of their kind. "We have seen mounds," remarks Flint, an American topographer, with a just appreciation of the relation of these earthworks to the features of the surrounding landscape, "which would require the labour of a thousand men employed on our canals, with all their mechanical aids, and the improved implements of their labour, for months. We have more than once hesitated in view of one of those prodigious mounds, whether it were not really a natural hill. But they are uniformly so placed, in reference to the adjacent country, and their conformation is so unique and similar, that no eye hesitates long in referring them to the class of artificial erections." The exploration of more than one of these huge earth-pyramids has entirely set at rest any doubts as to their artificial origin; and has, moreover, established the fact that they are monumental structures erected to perpetuate the memory of the honoured dead in ages utterly forgotten, and by a race of which they preserve apparently the sole remaining vestiges.

The works of the Mound-Builders extend over a wide geographical area, and include many other structures besides those of a sepulchral character. The original limits assigned by Messrs. Squier and Davis embraced the entire basin of the Mississippi and its tributaries, from the shores of the great lakes to the Gulf of Mexico, comprehending alike the fertile plains along the Gulf, and the whole northern territory, including the sources of the Alleghany in the western part of the State of New York. But a subsequent minute exploration of that State has led Mr. Squier entirely to dissociate the rude earthworks of the latter region from the remarkable ancient monuments previously explored. Rejecting

theory, he has, with honest and painstaking zeal, investigated the evidence which previously depended on loose, and, as it appears, exaggerated accounts, and he thus sums up the results: "In full view of the facts, I am driven to a conclusion little anticipated when I started upon my trip of exploration, that the earthworks of western New York were erected by the Iroquois, or their western neighbours, and do not possess an antiquity going very far back of the discovery." Already the plough is fast obliterating every trace of those memorial mounds and defensive works of frontier tribes, slight and ephemeral as their savage builders; but the convictions forced on the mind of their explorer by a personal survey, have not altered his views relative to the great earthworks previously described by him; or tempted him, as they have some other writers, to confound these lasting evidences of the combined operations of a numerous settled population, with the traces of the burial mounds and simple defences of the modern Indians.

The people by whom the great earthworks of the Mississippi Valley were constructed, and its remarkable defensive enclosures erected and maintained, must have been in a condition greatly different from the forest tribes of the seventeenth and eighteenth centuries. Nevertheless, though gathered at many favourite points, in large communities, they were probably isolated by extensive tracts of forest from the country lying beyond the river-systems in which they were settled. Their earthworks are of very diverse character, and partake in some respects of the local aspect of their sites; but they chiefly abound where the widely extended alluvial flats furnish the most fertile tracts for cultivation; and it has been justly noted as worthy of remark that the sites selected for settlements, towns, and cities by the modern supplanters of the Red Indian, are often those which were special favourites of the Mound-Builders, and seats of their densest population. Such can rarely be said of the Indian settlement, which owes the selection of its site to the convenience of the hunter, and loses all its attractions when the axe of the settler dissipates the charm. The country lying remote from the larger tributaries of the Mississippi and its main branches, was probably in the era of the Mound-Builders, as in later times, covered with forest, and tenanted by the abundant game of the hunter; while perchance on the outlying regions, or beyond the great Lakes and the Rocky Mountains, the progenitors of the modern Indian tribes lurked: like the barbarians of ante-christian Europe, who, beyond the Rhine and the Baltic, nursed

the future spoilers of Rome, and the builders-up of modern Europe out of the ruined empire of the Cæsars.

The fertile valley of the Scioto appears to have been one of the seats of densest population, as indicated by the numerous works which diversify its surface. Corresponding evidence preserves the traces of an equally dense population in the Miamis Valley; and throughout the State of Ohio the mounds and earthworks of various kinds are estimated at between eleven and twelve thousand. They are stated to be scarcely less numerous on the Kenhawas in Virginia than on the Scioto and Miamis, and are abundant on the White River and Wabash, as also upon the Kentucky, Cumberland, Tennessee, and numerous other tributaries of the Ohio and Mississippi. Works accumulated in such numbers, and, including many of great magnitude and elaborateness of design, executed by the combined labour of large bodies of workmen, afford indisputable evidence of the presence, through a greatly protracted period, of a settled and industrious population. Beyond those carefully explored regions, traces of other ancient structures have been observed at widely separated points; though caution must be exercised in generalizing from data furnished by casual and inexperienced observers. All primitive earthworks, whether for defence, sepulchral memorials, or religious rites, have certain features in common; and the tendency of the popular mind is rather to exaggerate chance resemblances into forced analogies and parallels, than to exercise any critical discrimination. Including, however, all large earthworks, essentially dissimilar from the slight structures of the modern Indian, they appear to stretch from the upper waters of the Ohio to the westward of Lake Erie, and thence along Lake Michigan, nearly to the Copper Regions of Lake Superior. Through Wisconsin, Iowa, and the Nebraska Territory, they have been traced extending towards the Rocky Mountains; while on the south their area is bounded by the shores of the Gulf of Florida and the Mexican territory, where they seem gradually to lose their distinctive character, and pass into the great teocallis of a higher developed Mexican architecture. Their affinities are indeed more southern than northern. They are scarcely, if at all, to be found to the eastward of the watershed between the Mississippi and the Atlantic, in the States of Pennsylvania, New York, or Virginia; and they have been rightly designated, from their chief site, the Ancient Monuments of the Mississippi Valley, including in this its tributaries, and especially the valley of the Ohio. There their

localities fully accord with those which, in the primitive history of the Old World, reveal the most abundant traces of an aboriginal population, in their occupation of the broad alluvial terraces, or "river bottoms," as they are styled. To the north the memorials of an ancient population are of a different character; and the earthworks in the vicinity of the Great Lakes must be classed by themselves, as indicating customs and rites distinct from those pertaining to the south.

The remarkable works thus traceable over a large extent of the North American continent have been so carefully explored, and minutely described, especially by Messrs. Squier, Davis, and Lapham, in valuable archæological monographs printed in the *Smithsonian Contributions to Knowledge*, that little more is needed for our present purpose than to refer to one or two characteristic types of each of the different classifications under which they have been grouped. They admit of being primarily arranged into the two obvious subdivisions of ENCLOSURES and MOUNDS, and these again embrace a variety of works diverse in form, and evidently designed for very different uses. Under the first of these heads are included the fortifications or strongholds; the sacred enclosures, destined, as is assumed, for religious rites; and numerous miscellaneous works of the same class, generally symmetrical in structure, but the probable use of which it is difficult to determine. The second subdivision embraces the true mound-buildings, including what have been specially designated sacrificial, sepulchral, temple, and animal mounds. All, however, partake of characteristics pertaining to a broad, level country; but this is nowhere so strikingly apparent as where mounds seem to have been purposely erected as observatories or points of sight from whence to survey the works elaborated on a gigantic scale on the level plain. In addition to the striking features which their external aspect exhibits: wherever they have been excavated many interesting relics of the ancient builders have been disclosed, adding new and minutely graphic illustrations of their social condition, and the artistic and industrial arts of the remote period to which they pertain.

The British hill-forts, the remarkable vitrified forts of Scotland, and the larger strongholds of the British aborigines, such as the ingenious circumvallations of the White Caterthun overlooking the Scottish valley of Strathmore, all derive their peculiar character from the mountainous features of the country; while on

the low ground, under the shadow of the Ochils, the elaborate earthworks of the Camp of Ardoch show the strikingly contrasting castrametation of the Roman invaders. The ancient military encampments or raths of Ireland, which abound in the level districts of that country, as well as on heights where stone is not readily accessible, also furnish highly interesting illustrations of earthworks with a special character derived from the features of their localities. An earthen *dune* or *rath*, as in the celebrated Rath Keltair at Downpatrick, occupies a commanding site, where it is strongly entrenched, with a considerable space of ground enclosed within its outworks. The celebrated Hill of Tara, in the county of Meath, ceased, according to tradition, to be the chief seat of the Irish kings, since its desertion in the latter part of the sixth century, shortly after the death of Dermot, the son of Fergus. It appears to have been a fortified city; and now, after the devastations of thirteen centuries, its raths and dunes, circumvallations and trenches, present many interesting points of comparison with the more extensive earthworks of the Mississippi valley. But neither the Scottish White Caterthun, nor the Irish Rath Keltair, or even the Rath Righ of Tara Hill, can compare with the remarkable American stronghold of Fort Hill, Ohio, or Fort Ancient on the Little Miami River, in the same State.

The valley of the Mississippi is a vast sedimentary basin extending from the Alleghanies to the Rocky Mountains. Through this the great river and its numerous tributaries have made their way for countless ages, working out shallow depressions in the alluvial plain, on which are recorded successive epochs of change in the broad terraces that mark the deserted levels of ancient channels. The edges of these table-lands bordering on the valleys are indented by numerous ravines; and the junctions of many lesser streams with the rivers have formed nearly detached peninsulas, or in some cases tracts of considerable elevation insulated from the original table-land. Many of those bluff headlands, peninsulas, and isolated hills with extensive level summits, presented all the requisite adaptations for native strongholds on the river skirts of those fertile table-lands, where traces of an ancient population abound. These points have, accordingly, been fortified with great labour and skill. Embankments and ditches enclose the whole space, varying in strength according to the natural resources of the ground. The approaches are guarded by trenches and overlapping walls, more or less numerous in

different forts; and have occasionally a mound alongside of the other defences of the approach, but rising above the rest of the works, as if designed both for out-look and additional defence. In some few cases the walls of these enclosures are of stone, but if they were ever characterized by any attempt at regular masonry all traces of it have disappeared, and there seems little reason for supposing that such walls differed in essential character from the earthworks. No cement was used, and in all probability we have in these only the substitution of stone-heaps instead of earth-banks, owing to special local facilities.

One of the simplest, but most extensive of those primitive strongholds, is Fort Hill, Ohio. The defences occupy the summit of a height, elevated about five hundred feet above the bed of Bush Creek, which flows round two sides of it, close to its precipitous slope. Along the whole edge of the hill a deep ditch has been cut, and the materials taken from it have been piled up into an embankment, rising from six to fifteen feet above the bottom of the ditch. In its whole extent the wall measures eight thousand two hundred and twenty-four feet, or upwards of a mile and a half in length, and encloses an area of forty-eight acres, now covered with gigantic forest-trees. One of them, a chestnut, measured twenty-one feet, and an oak, though greatly decayed, twenty-three feet in circumference, while the trunks of immense trees lay around in every stage of decay. Such was the aspect of Fort Hill, Ohio, a few years ago, and it is probably in no way changed now. Lyell mentions, in his *Travels in North America*, that Dr. Hildreth counted eight hundred rings of annual growth in a tree which grew on one of the mounds at Marietta, Ohio; and Messrs. Squier and Davis, from the age and condition of the forest, ascribe an antiquity to its deserted site of considerably more than a thousand years. In their present condition, therefore, the walls of the "Fort Hill" are ruins of an older date than the most venerable stronghold of the Normans of England; and we see as little of their original completeness, as in the crumbling Norman keep we are able to trace all the complex system of bastions, curtains, baileys, buttress-towers, and posterns of the military architecture of the twelfth century. Openings occur in the walls, in some places on the steepest points of the hill, where access is impossible; and where, therefore, we must rather suppose that platforms may have been projected to defend more accessible points. The ditch has in many places been cut through sand-

stone rock as well as soil; and at one point the rock is quarried out so as to leave a mural front about twenty feet high. Large ponds or artificial reservoirs for water have been made within the enclosure; and at the southern point, where the natural area of this stronghold contracts into a narrow and nearly insulated projection terminating in a bold bluff, it rises to a height of thirty feet above the bottom of the ditch, and has its own special reservoirs, as if here were the keep and citadel of the fortress: doubtless originally strengthened with palisades and military works, of which every trace had disappeared before the ancient forest asserted its claim to the deserted fortalice.

Here then, it is obvious we look on no temporary retreat of some nomade horde, but on a military work of great magnitude: which, even with all the appliances of modern engineering skill, would involve the protracted operations of a numerous body of labourers, and when completed must have required a no less numerous garrison for its defence. And this may be taken as an example of the remarkable military earthworks, though they necessarily differ greatly in detail from their ingenious adaptation to varying sites. One, called "Fort Ancient," built on two nearly detached terraces, rising with precipitous banks two hundred and thirty feet above the Little Miami River, Ohio, is walled by a range of embankments, measuring at the most accessible points from eighteen to twenty feet high, and extending altogether to a length little short of four miles, besides detached mounds, parallels, and overlapping curtain-walls. Professor Locke of Cincinnati, by whom Fort Ancient was minutely surveyed, with a numerous staff of assistants, states that "the number of cubic yards of excavation may be approximately estimated at 628,800;" and after discussing various geological and other evidences of the age of the insulated hills and their elaborate earthworks, he concludes by expressing his astonishment "to see a work, simply of earth, after braving the storms of thousands of years, still so entire and well marked."

Subsequent explorations, already referred to, have led to the narrowing of the area ascribed to the works of the Mound-Builders by assigning the origin of all the more northern remains to Iroquois and other Indian tribes known to have been in occupation of Western New York in comparatively recent times. These conclusions are of considerable importance in their indirect bearing on questions suggested by the characteristics of the more ancient

works. Among the Indian tribes who have come under direct observation of Europeans, none played a more prominent part than the united nations of the Iroquois. At the period of Dutch discovery in the beginning of the seventeenth century, they occupied the territory between the Hudson and the Genesee rivers, of which they continued to maintain possession for nearly two centuries thereafter, in defiance of warlike native foes, and the more formidable aggression of French invaders. The Iroquois, moreover, exhibited a capacity for united action, and a consistent hereditary policy, without a parallel in Indian history. Their famous League, or Confederation of the Five Nations, was organized and maintained with an undeviating fidelity to their federal interests. Their numbers, at the period of their greatest prosperity, about the middle of the seventeenth century, have been variously estimated from 70,000, which La Hontan assigned to them, to Bancroft's calculations, which reduce them to 17,000. Probably the estimate of 25,000 given by the historian of their League is as fair an approximation to the actual numbers as can now be made. Very exaggerated pictures have been drawn by some modern writers of this Iroquois confederacy, as though it were a well-organized oligarchical government of federal states, not greatly inferior to the civil institutions of Mexico and Peru. Such an idea is wholly inconsistent with facts. The Iroquois were a mere nation of savage hunters, among whom only the earliest germs of incipient civilisation are traceable. They had indeed acquired settled habits, and devoted themselves to some extent to agriculture, so that they presented the highest type of the hunter state. But with all the matured arts resulting from combined action, in the maintenance of a settled territory for successive generations against fierce hostile tribes, and the defence of an extensive frontier constantly exposed to invasion, the traces of the Iroquois strongholds are of so slight a description that many of them have already been obliterated by the plough.

From the facts thus presented to our consideration, it is obvious that the highest estimate we can entertain of the remarkable powers of combination indicated by the famous League of the Iroquois, or all the singularly interesting germs of an incipient civilisation which we detect in the history of "the Five Nations," furnish no evidence of a capacity for the construction and maintenance of works akin to the strongholds of the Mound-Builders in the Ohio valley. Striking as is the contrast which the Iroquois present to more ephemeral savage tribes, the remains of their earth-

works are scarcely less inferior to those of the Mound-Builders than the latter are to the elaborate architecture of Mexico and Yucatan. There are indeed points of resemblance between the strongholds of the two, as there are between them and the British hill-forts, or any other earthworks erected on similar sites; but beyond such general elements of comparison,—equally interesting, but as little indicative of any community of origin as the correspondence traceable between the flint and stone weapons in use by the builders of both,—there is nothing in such resemblances calculated to throw any light on the origin of those remarkable monuments of the New World. It is rather from the striking contrast between the two that we may turn the remains of Iroquois defences to account, as suggestive of the greatly more advanced condition of social life and the arts of a settled population, among the Mound-Builders of the Mississippi and its tributaries.

Further proofs of the settled character of this ancient population are furnished by another class of defensive works, supposed to mark the sites of fortified towns. One of these, called "Clark's Work," on the north fork of Point Creek, in the Scioto valley, embraces in its main defences and a uniform rectangular outwork, an area of one hundred and twenty-seven acres; and encloses within its circumvallations sacrificial mounds and symmetrical earthworks, assumed with every probability to have been designed for religious or civic purposes. In this, as in some other examples, a stream has been turned into an entirely new channel, in order to admit of the completed circuit of the walls. Considerable traces of the action of fire are apparent on some portions of the work; and within its enclosures many of the most interesting relics of ancient art have been dug up, including several coiled serpents of carved stone, carefully enveloped in sheet mica and copper; pottery, fragments of carved ivory, discoidal stones, and numerous fine sculptures. "The amount of labour," Mr. Squier remarks, "expended in the construction of this work, in view of the imperfect means at the command of the builders, is immense. The embankments measure together nearly three miles in length; and a careful computation shows that, including mounds, not less than three million cubic feet of earth were used in their composition."[1]

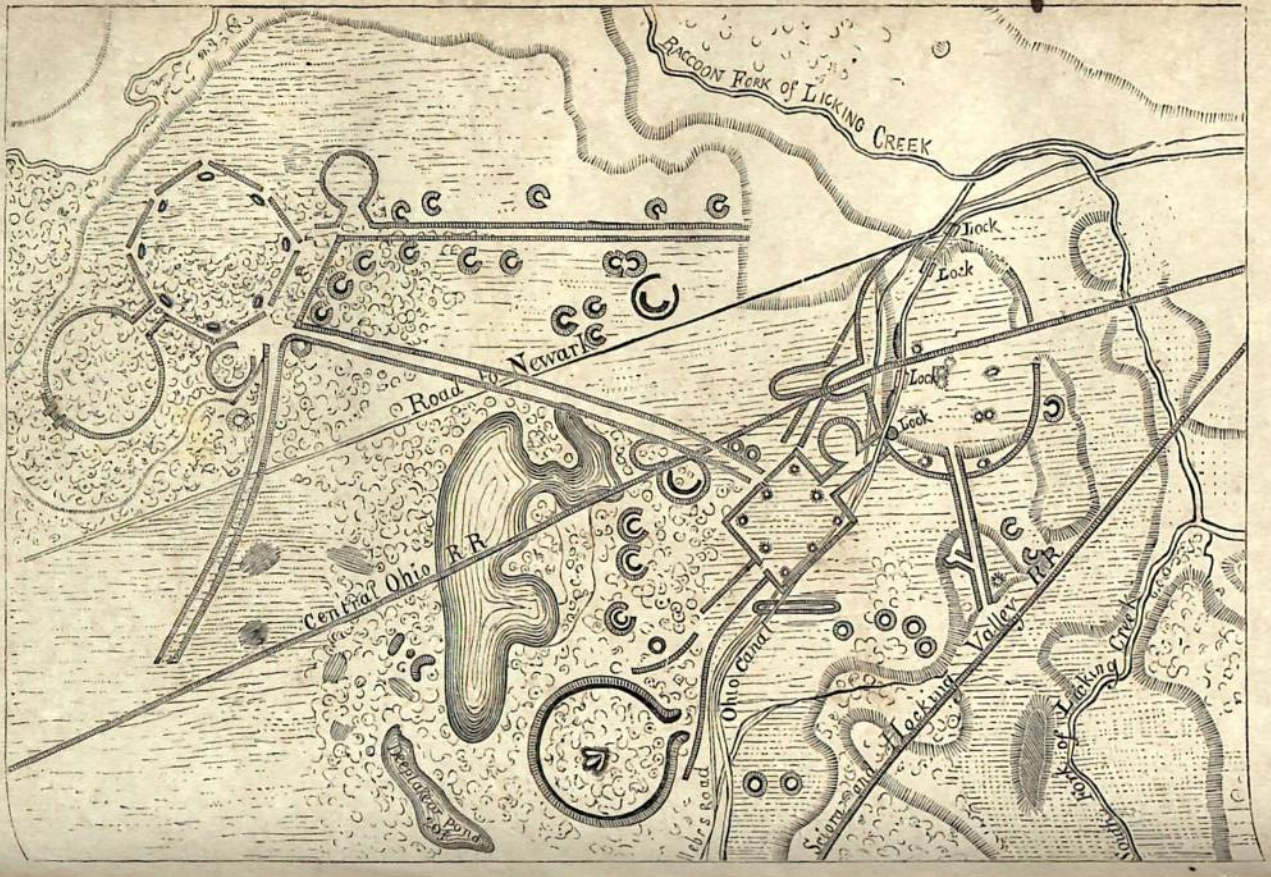
It is obvious that the population capable of furnishing the requisite labour for works of so extensive a nature must have been great, and its resources for the maintenance of such a phalanx of

[1] *Ancient Monuments of the Mississippi Valley*, pp. 26-29, plate x.

workers proportionally abundant. The garrisons of the great strongholds, and the population that found shelter within such mural defences as "Clark's Work," must also have been very large, and requiring for their subsistence the contributions of an extensive district. Such conclusions are inevitable, from the evidence which the two classes of defensive works afford; and they derive abundant confirmation from those of diverse character. "By a minute attention to the various details of their defensive works," the authors of the elaborate Report on the Ancient Monuments of the Mississippi Valley remark, "we are prepared to estimate the judgment, skill, and industry of their builders. No one can rise from such an examination except with the conviction that the race by whom these works were erected, possessed no inconsiderable knowledge of the science of defence, a degree of knowledge much superior to that known to have been possessed by the hunter tribes of North America previous to the discovery by Columbus, or indeed subsequent to that event. Their number and magnitude must also impress the inquirer with enlarged notions of the power of the people commanding the means for their construction, and whose numbers required such extensive works for their protection." The evidence of many sections of the country having once been filled by a dense population is no less conclusive, when we turn from the consideration of single large fortifications crowning the insulated heights: and estimate the number and extent of the mounds, symmetrical enclosures, and earthworks of various kinds connected with the arts of peace and the rites of religious worship, which give so striking a character to the river valleys and terraces.

The class of earthworks designated Sacred Enclosures has been separated from the military works of the Mound-Builders on very obvious grounds. Their elaborate fortifications are adapted in each case to the natural features of well-chosen hills or bluffs, and strengthened by external ditch, mound, and complicated approaches; whereas the broad river terraces have been selected for their religious works. There, on the great unbroken level, they form groups of symmetrical enclosures, square, circular, elliptical, and octagonal, with long connecting avenues, suggesting comparisons with the British Avebury, or the Hebridean Callernish; with the Breton Carnac; or even with the temples and Sphinx-avenues of the Egyptian Karnak and Luxor. The embankments or earth-walls are generally slight. Exceptional cases, however, exhibit them on an imposing scale, as in the great circle at Newark,

FIG. 16.—"NEWARK EARTHWORKS."



Ohio, which forms part of an extensive series of square, circular, and polygonal enclosures, with mounds, ditches, and connecting avenues, extending over nearly four square miles. This singular group, designated "The Newark Works," will be best understood by a reference to the accompanying plan, derived from surveys executed since those of Mr. Charles Whittlesey.[1] The plans differ in one or two minor details; but a comparison will be found chiefly interesting from showing the changes effected by modern civilisation in a very few years, on a region which, to all appearance, had previously remained unaltered through many centuries. From this it will be seen that the group consists of a complicated series of earthen walls, symmetrical in their principal features, and connected by avenues and other subordinate works, some of which appear to be subsequent additions to the original design. The engraving, however, conveys a very imperfect idea of the scale on which the whole is constructed. An elliptical enclosure, measuring respectively twelve hundred and fifty, and eleven hundred and fifty feet in its diameters, is formed by embankments about twelve feet in perpendicular height, by fifty feet of base, and with an interior ditch seven feet deep by thirty-five feet wide. At the entrance, which, as a nearly invariable rule, is placed towards the east, the ends of the enclosing walls curve outwards for a distance of a hundred feet, with the ditch continued along the inner side of each, leaving a level way between, measuring eighty feet wide. In the centre of this enclosure is a remarkable structure, apparently designed to represent a bird with expanded wings; but on opening it, an "altar" was found under the centre of the long mound constituting the body: in which respect it differs from the emblematic mounds of Wisconsin. The fact is an important one, tending as it does to confirm the idea that the great circle and its group of earthworks all bore some relation to the strange rites of religion once practised within those circumvallations under the broad canopy of heaven.

From the elliptical enclosure a wide avenue of two dissimilar parts, seemingly constructed without relation to each other, leads to a square of twenty acres, with seven mounds disposed symmetrically within the enclosing walls, and numerous other works occupy hundreds of acres with their geometrical configurations. One octagonal earthwork, enclosing upwards of fifty acres, is connected by parallel walls extending a distance of three hundred feet,

[1] *Ancient Monuments of the Mississippi Valley*, plate xxv.

with a circular work 2880 feet, or upwards of half a mile, in circumference; and notwithstanding its great scale, the surveyors specially note that they ascertained this to be *a true circle.* Corresponding parallels are continued on the opposite side a distance of one hundred feet; and then midway across this, an immense oblong mound, measuring 170 feet long, rises eight feet above the walls of the circle. From its summit the whole works can be overlooked; and on this account it has received the name of the "Observatory." But it is a unique feature, the original purpose of which it is difficult to surmise. Since it was first described, a trench has been cut through it, from which it is proved to be entirely constructed of clay; and the conclusion suggested to careful observers appears to be that this, as well as others of the more important earthworks, were built of adobes, or sun-dried bricks, the external and exposed surfaces of which have gradually crumbled away, and been clothed with the vegetation of many centuries. Numerous mound-pyramids and enclosures of smaller dimensions are included in this group; and a number of small circles, about eighty feet in diameter, have been supposed to mark the sites of ancient dwellings. A relic called "the Ohio Holy Stone," inscribed in Hebrew characters, affirmed to have been discovered in one of these, has attracted an amount of attention amusingly characteristic of the credulous wonder with which the ancient earthworks are regarded. Without the accompanying plan, description would convey a very vague idea of the remarkable works of which this Newark group is a type. While they present certain analogies to mound-groups and enclosures both of Europe and Asia, in many other respects they are totally dissimilar: and illustrate rites and customs of an ancient American people unparalleled in the monumental memorials of the Old World.

Several striking coincidences between the details of these works and others of the same class are worthy of notice. The diameter of the circle, the perfect form of which has been noted, is nearly identical with two others forming parts of remarkable groups in the Scioto valley, one of them seventy miles distant. The square has also the same area as a rectangular enclosure belonging to the "Hopeton Works," where it is attached to a circle 1050 feet in diameter, and to an avenue constructed between two parallel embankments 2400 feet long, leading to the edge of a bank immediately over the river-flat of the Scioto. A like coincidence in the precise extent of the area enclosed, is noticed in the octagon of

another group, called the High Bank Works, on the same river-terrace; and in another, at the junction of the Muskingum and Ohio rivers; and the authors of the elaborate surveys referred to remark generally that the figures of the Scioto valley earthworks are not only accurate squares and perfect circles, but are in most cases of corresponding dimensions; each square being 1080 feet a side, and the diameter of each of the larger and smaller circles a fraction over 1700 and 800 feet. This they accordingly observe is "a coincidence which could not possibly be accidental, and which must possess some significance. It certainly establishes the existence of some standard of measurement among the ancient people, if not the possession of some means of determining angles."[1] It is no less important to note that it establishes with equal certainty the use of instruments. A standard of measurement could not otherwise exist, still less be applied, on so large a scale in geometrical construction; and the very simplest instruments that we can conceive of, constitute a no less certain evidence of the very different condition of intellectual development attained by this ancient people from anything achieved by the most advanced Indian tribes. Varied, moreover, as the combinations of their singular groups of earthworks are, traces are clearly discernible that certain well-defined plans of construction, and a proportionate scale of parts, guided their builders. Justly estimating the importance of such coincidences, and the still greater value of the evidence of the perfect construction of geometric figures on so large a scale, the authors of the surveys have detailed their method of procedure, in order "to put at once all scepticism at rest, which might otherwise arise as to the regularity of these works." This important point rests accordingly on the most satisfactory evidence;[2] nor are even the imperfections observed in the construction of some of the rectangular figures without their significance, as a test of the extent to which geometry had been mastered by the ancient builders.

That this remarkable class of earthworks originated in some totally different purpose from the strongholds already described, is obvious: for their site is invariably on a level plateau, and their avenues are connected by laboriously constructed approaches with the neighbouring flats, as if to facilitate the solemn march of processions. The embankments are frequently slight; where a ditch occurs it is generally in the interior; and the whole construction

[1] *Ancient Monuments of the Mississippi Valley*, p. 48. [2] *Ibid.* p. 57.

is in striking contrast to the defensive enclosures in their vicinity. At Newark they extend over the level terrace, and, with outlying structures, embrace an area of several miles in extent; and on each side of the Valley, formed by the Racoon Creek, military works occupy two prominent elevations presenting special natural advantages for defence. One of these, obviously of a defensive character, encloses the summit of a high hill; but it also contains a small circle with tumuli, covering "altars" corresponding to those hereafter described, which give their peculiar character to the sacred mounds. There is no room, therefore, for doubt that the various works referred to illustrate what may be styled the civil, military, and ecclesiastical structures of the same ancient people.

The most important inference deducible from the peculiar features of the works referred to, is the state of knowledge of their constructors. The most skilful engineer of our own day would find it difficult, without the aid of instruments, to lay down an accurate square on the scale of some of those described, enclosing an area four-fifths of a mile in circumference. Circles of moderate dimensions might indeed be constructed, so long as it was possible to describe them by a radius; but with such works measuring five thousand four hundred feet, or upwards of a mile in circumference, the ancient geometrician must have had instruments, and minute means of measuring arcs: for it seems impossible to conceive of the accurate construction of figures on such a scale, otherwise than by finding the angle by its arc, from station to station, through the whole course of their delineation. It is no less obvious from the correspondence in area and relative proportions of so many of the regular enclosures, that the Mound-Builders possessed a recognised standard of measurement, and that some peculiar significance, possibly of an astronomical origin, was attached to figures of certain forms and dimensions.

A discovery made in 1841, in excavating a sepulchral mound within the limits of the city of Cincinnati, has been the subject of some ingenious speculations, and may perhaps aid in our present investigations. In the centre of the mound, and slightly below the level of the surrounding surface, a skeleton was found greatly decayed, alongside of which lay two pointed bones, about seven inches long, formed from the tibia of the elk, and an engraved tablet of fine-grained sandstone, measuring five inches in length, by two and six-tenths across the middle, and three inches at the ends. Upon its smooth surface an elaborate figure is represented, as shown in

the accompanying illustration, by sinking the interspaces within a rectangular border, so as to produce what has been regarded as a hieroglyphic inscription. But a remarkable feature of its graven device is the series of lines by which the plain surface at each end is divided. The ends of the stone, it will be observed, form arcs

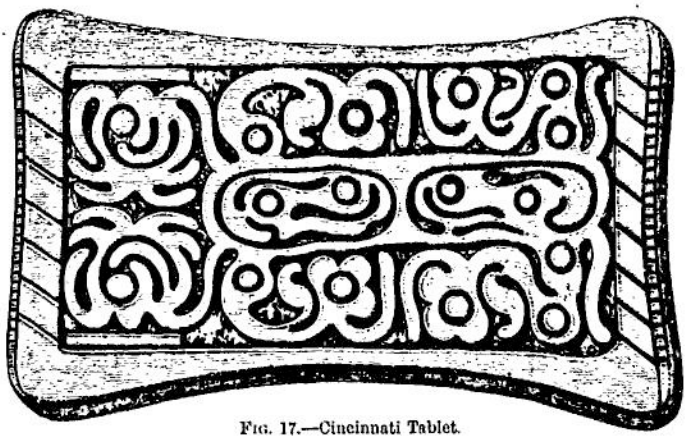


FIG. 17.—Cincinnati Tablet.

of circles of different dimensions. The greater arc is divided by a series of lines, twenty-seven in number, into equal spaces, and within this is another series of seven oblique lines. The lesser arc at the opposite end is divided in like manner by two series of twenty-five and eight lines, similarly arranged. This tablet has not failed to receive due attention. It has been noted that it bears a "singular resemblance to the Egyptian cartouche." Its series of lines were discovered to yield, in the sum of the products of the longer and shorter ones, a near approximation to the number of days of the year: a result which furnished the requisite grounds for ascribing to the tablet an astronomical origin, and so constituting it an ancient calendar, recording the approximation of the Mound-Builders to the true length of the solar year. Mr. Squier perhaps runs to an opposite extreme in suggesting that it is probably nothing more than a stamp, such as have been found made of clay, both in Mexico and the Mississippi mounds, used in impressing ornamental patterns on cloth or prepared skins. Such clay stamps always betray their purpose by the handle attached to them, as in the corresponding bronze stamps common on Roman sites; whereas the Cincinnati tablet is about half an inch in thickness, with no means of holding or using it as a stamp, and bears on its unfinished reverse

grooves apparently made in sharpening the tools by which it was engraved. But whatever theory be adopted as to its original object or destination, the series of lines on its two ends have justly attracted attention: for they constitute no part of the device; and if intended as an ornamental border would, it may be presumed, have been carried round the entire tablet. Another hypothesis may therefore be admissible, that here, possibly, is a record of certain scales of measurement. Only for the construction of regular curves could it be supposed that such minute subdivisions were required in the scale of a rude people. It has been noted that no two of its graven lines are precisely alike. But this has been assumed as evidence alike of its imperfection and genuineness: Mr. Guest, its possessor, shrewdly remarking, that "a person in our times could scarcely make so perfect an engraving as this stone, and not make it more perfect." Yet the seemingly systematic variation of curve and scale in the sides is suggestive of the idea that this is purposely designed as one of the practical features of the ancient instrument. If so, the discovery of a record pertaining to the standards of measurement of the Mound-Builders is calculated to add a new and more definite interest to our study of their geometrical constructions.[1]

Such may suffice to illustrate the predominant characteristics of one remarkable series of American earthworks. The precise objects aimed at in their construction it must obviously be difficult to determine with any certainty. Analogies to these structures have been traced in the works of Indian tribes formerly in occupation of Carolina and Georgia. They were accustomed to erect a circular terrace or platform on which their council-house stood. In front of this, a quadrangular area was enclosed with earthen embankments, within which public games were played and captives tortured. To this was sometimes added a square or quadrangular terrace at the opposite end of the enclosure. Upon the circular platform it is also affirmed that the sacred fire was maintained by the Creek Indians, as part of their most cherished rites as worshippers of the sun. But even the evidence, thus far, is vague and unsatisfactory; and any recognisable analogies point, at best, only to the possibility of some of the Indian tribes having perpetuated on a greatly inferior scale some maimed rites borrowed from their civilized precursors. The scale upon which the southern Indian earthworks were constructed may compare with those of the Iroquois

[1] The woodcut is engraved from a rubbing taken from the original.

in the State of New York, but in no degree approximates to the erections of the Mound-Builders.

Nearer resemblances might be traced, without any great play of fancy, to the classic stadium or circus, and to the stone avenues of Carnac, Avebury, and Callernish ; but in any such comparisons we can go but a little way, without being compelled to make as large demands on the imagination as have already served to swell out bulky quartos of Druidical antiquarianism to little purpose. What, for example, shall we make of the graded ways, such as that of Piketon, Ohio, where an approach has been laboriously formed from one terrace to another, one thousand and eighty feet long by two hundred and fifteen feet in greatest width? The excavated earth has been employed, in part, to construct lofty embankments on each side of the ascent, which are now covered with trees of large size. Beyond this approach, mounds and half-obliterated earthworks indicate that it was only part of an extensive series of structures. But, viewed alone, it is one of the most remarkable monuments of prehistoric times to be found on the whole continent, and certainly bears not the slightest resemblance, either in its character or the great scale on which it is executed, to any work of the Red Indians. Thus much, therefore, these, and other remains hereafter described, combine to tell us : that, where the western settlers of the United States are now obliterating the ancient forests, from whence they have driven out their old Indian inheritors, there existed, before these forests and their savage occupants, a people endowed with many of the characteristics and acquirements which tend to the elevation of nations.

CHAPTER XI.

SEPULCHRAL MOUNDS.

SOURCES OF INFORMATION—HILL MOUNDS—BLACK BIRD'S GRAVE—HIS MEMORIAL MOUND—SCIOTO VALLEY MOUND—SYMBOLICAL RITES—HUMAN SACRIFICES—THE GRAVE CREEK MOUND—COMMON SEPULCHRES—CREMATION—SCIOTO MOUND CRANIUM—SACRED FESTIVALS.

WHEN the significance of the military and sacred enclosures of the Mound-Builders has been fully estimated as memorials of a remarkable people belonging altogether to prehistoric ages of the New World, their sepulchral mounds acquire a new value. In the former we see unmistakable indications of a settled condition of society greatly in advance of anything attained by the Red Indian, and of populous communities devoted to agriculture and other industrial arts. From the latter we may hope to recover some traits of ethnical character; to find in the gifts to the dead illustrations of their arts and customs; and to catch by means of their sepulchral rites some glimpses of the nature of that belief which stimulated the Mound-Builders to the laborious construction of so many sacred earthworks. Their great mounds are for us not merely the sepulchres of an ancient race; they are the cemetery of an early though partial civilisation, from whence we may derive illustrations of the life, manners, and ideas of a people over whose graves the forest had so long resumed its sway, that it seemed to the Red Indians' supplanters to have been the first occupant of the soil.

Barrows, dunes, moat-hills, cairns, and earth or stone mounds of various kinds, abound in many parts of the Old as well as of the New World, and are nowhere more abundant than in some districts of the British Isles. But although corresponding primitive structures are met with from the Gulf of the St. Lawrence to the Isthmus of Panama, and beyond it, far into the southern continent: nevertheless the works of the Mound-Builders have a character of their

own altogether peculiar; and though numbered by thousands, they are limited to well-defined areas, leaving a large portion of the continent, including the whole of the Atlantic sea-board, without any traces of their presence. The Mound-Builders were not a maritime people. Their whole traffic was confined to the great rivers, along the banks of which their ancient traces abound, and to communication by long-obliterated overland routes of travel. Notwithstanding the careful observations which have been put on record relative to the mounds and earthworks of "The West," much yet remains to be disclosed; for, happily, the excavation of such earth-pyramids is a work greatly too laborious and costly to tempt those who are influenced by mere idle curiosity; while their contents, however valuable to the archæologist, offer no such stimulus to cupidity as, in Mexico and Peru, has led to the destruction of thousands of the memorials of extinct arts and customs.

As a general rule, the earth and stone works appear to have been alike constructed of materials derived from the immediate neighbourhood, so that such differences do not, in the majority of instances, supply any indication of diversity in the enclosed deposits. A special character, however, appears to pertain to one class, designated "Hill Mounds," from the sites they occupy. Of these Mr. Squier remarks: "The most elevated and commanding positions are frequently crowned with them, suggesting at once the purposes to which some of the mounds or cairns of the ancient Celts were applied: that of signal or alarm posts. It is not unusual to find detached mounds among the hills back from the valleys, and in secluded places, with no other monuments near. The hunter often encounters them in the depths of the forests when least expected; perhaps overlooking some waterfall, or placed in some narrow valley where the foot of man seldom enters." Similar structures crown many western heights; but some at least are of Indian origin; and our knowledge of the characteristics and contents of those of an earlier race must be greatly extended, before we can assign the true and probably varied objects aimed at in their erection.

But it is to the exploration of one of the smaller hill-mounds that we owe the recovery of the most characteristic illustration of the physical type of the ancient Mound-Builders. The "Scioto Mound Cranium," described in a future chapter, was obtained from a mound erected on the summit of a commanding height overlook-

ing the valley of the Scioto, with its numerous earthworks. A conical knoll crowning the hill, rises with such regularity as almost to induce the belief that it is artificial; and on its apex stands the tumulus overshadowed by the trees of the primitive forest. Here under a covering of tough yellow clay, impervious to moisture, a plate of mica rested on an inner cairn, composed chiefly of large rough stones; and within this, a compacted bed of carbonaceous matter contained the skull, with a few bones, and some shells of fresh water molluscs, disposed irregularly round it. This, therefore, it will be seen, confirms the idea that cremation played an important part in the ancient sepulchral rites. The remoter hill-mounds will probably be found to reveal similar analogies in structure or contents to those of the plains; and so furnish evidence that the population which crowded the great valleys was diffused in smaller numbers, far inland from the river's banks, in the outlying valleys and among the secluded recesses of the hills. There, perhaps, as among the higher valleys of the Andes, under the rule of the Incas, a pastoral people supplemented the agricultural industry of the central provinces, and shared with them the common rites and superstitions of the national religion.

In some cases the lofty site of the hill-mound may have determined its selection from the same motive which occasionally guides the modern Indian in his choice of a spot for his grave. Of this a striking illustration is furnished in the history of one modern tumulus on the Missouri. Upwards of forty years since, Black Bird, a famous chief of the Omahaws, visited the city of Washington, and on his return was seized with small-pox, of which he died on the way. When the chief found himself dying, he called his warriors around him, and, like Jacob of old, gave commands concerning his burial, which were as literally fulfilled. The dead warrior was dressed in his most sumptuous robes, fully equipped with his scalps and war-eagle's plumes, and borne about sixty miles below the Omahaw village, to one of the loftiest bluffs on the Missouri, which commands a magnificent extent of river and landscape. A beautiful white steed, the favourite war-horse of Black Bird, was led to the summit; and there, in presence of the whole nation, the dead chief was placed with great ceremony on its back, looking towards the river, where, as he had said, he could see the canoes of the white men as they traversed the broad waters of the Missouri. His bow was placed in his hand, his shield and quiver, with his pipe and medicine-bag, hung by his side. His store of pemmican

and well-filled tobacco-pouch were supplied, to sustain him on the long journey to the hunting-grounds of the good Manitou, where the spirits of his fathers awaited his coming. The medicine men of the tribe performed their most mystic charms to secure a happy passage to the land of the great departed; and all else being completed, each warrior of the chief's own band covered the palm of his right hand with vermilion, and stamped its impress on the white sides of the devoted war-steed. This done, the Indians gathered turfs and soil, and placed them around the feet and legs of the horse. Gradually the pile rose under the combined labour of many willing hands, until the living steed and its dead rider were buried together under the memorial mound; and high over the crest of the lofty tumulus which covered the warrior's eagle plumes, a cedar post was reared to mark more clearly to the voyagers on the Missouri, the last resting-place of Black Bird, the great chief of the Omahaws. In the old Pagan barrows on the wolds of Yorkshire, and northward as far as the Moray Firth, ancient British and Saxon charioteers have been exhumed, with the iron wheel-tires and bronze horse-furniture, the wreck of the decayed war-chariot, and the skeletons of the horses: buried there with the dead chief, that he too might enter the Valhalla of his gods, proudly borne in the chariot in which he had been wont to charge amid the ranks of his foes. For man in all ages and in both hemispheres is the same; and amid the darkest shadows of Pagan night, he still reveals the strivings of his nature after that immortality, wherein also he dimly recognises a state of retribution.

One of the most striking evidences of the extent of occupation of the country, and the denseness of its population in the forgotten centuries recalled by their ancient works, is furnished by a map in the *Ancient Monuments of the Mississippi Valley*, showing a section of twelve miles of the Scioto Valley. Square, circular, and polygonal enclosures, single and in groups, parallels, ditches, and mounds, occupy every available terrace along the banks of the Scioto River, and its tributary Paint Creek. Elaborate surveys and explorations have furnished many interesting disclosures relative to the origin and objects of the varied earthworks of this once populous area; and several of the mounds have been opened so as thoroughly to illustrate their structure and contents. They invariably covered a single skeleton: though in some of those opened in other localities, more than one body appears to have been deposited under the same mound.

Numerous as monuments of this class are, their relative numbers, when compared with the sacred and civic works of the same districts, prove that they are not the common places of sepulture, but monumental memorials of distinguished dead. They vary in size from six to eighty feet in height; and frequently occur in groups, where smaller mounds are ranged round one of considerable dimensions. Such is the case with a group in Ross county, Ohio. It occupies the third terrace on the east side of the Scioto Valley, nearly a hundred feet above the river, and about equidistant from two of the most remarkable sacred enclosures already referred to. The principal mound is twenty-two feet high; and on penetrating to its centre the traces of a rude sarcophagus of unhewn logs were indicated by the cast which still remained in the compacted earth. The bottom had been laid with matting or wood, the only remains of which were a whitish stratum of decomposed vegetable matter; and the timbers of the simple sarcophagus had in like manner decayed, and allowed the superincumbent earth to fall on the skeleton. In this, as in most others of the opened tumuli, accordingly, the human bones were found in fragments, which crumbled to powder under the lightest touch. Indeed, when it is borne in remembrance how frequently crania and other bones have been recovered from British tumuli in a perfect condition, though unquestionably pertaining not only to the Roman period, but in some instances to ages dating beyond the Christian era: the decayed condition of the skeletons, thus protected alike from air and moisture in the centre of the large American mounds, furnishes a stronger evidence of their great antiquity than any proofs that have been derived either from the age of a subsequent forest growth, or the changes wrought on the river terraces where they most abound.

Alongside of the skeleton deposited under this mound, were several hundred beads, made of the columellæ of marine shells and of the tusks of some animal; and some of them, according to their discoverers, bearing marks which seemed to indicate that they were turned, instead of being carved, or ground into shape by the hand. They retained their position, forming a triple row, as originally strung round the neck of the dead; and, with the exception of a few laminæ of mica, were the only objects discovered in the grave. A layer of charcoal, about ten feet square, lay directly above the sarcophagus; and seemed, from the condition of the carbonized wood, to have been suddenly quenched by heaping the earth over it while still blazing.

Similar layers of charcoal constitute a noticeable feature in mounds of this class, and seem to indicate either that sacrifices were performed over the bier, or that funeral rites of some kind were celebrated, in which fire played an important part. In these funeral pyres probably many perishable articles were consumed without leaving any trace behind; as the beds of charcoal are intermingled occasionally with fragments of bone, stone implements, and other evidences of sacrifices and tribute to the deceased. It is also apparent that the fire was kindled and allowed to blaze only for a limited time, when its flames were quenched by heaping the earth over the glowing embers; so that, while charcoal occurs beneath as well as above the skeleton, the bones are unaffected by fire. The rite was practised where cremation was not followed; and may have been symbolical of the lamp of life quenched for ever in the grave. Implements, both of stone and metal, have been found in those grave-mounds, but for the most part their contents indicate a totally different condition of society and mode of thought from what Indian sepulture implies. Weapons are of rare and exceptional occurrence. The more common objects are personal ornaments, such as bracelets, perforated plates of copper, beads of bone, shell, or metal, and similar decorations worn on the body at the time of its interment. Among the objects which appear to have been purposely disposed around the dead, plates of mica occur most frequently. In some cases the skeleton has been found entirely covered with this material; and in others the laminæ have been cut into regular figures: disks, ovals, and symmetrical curves. As a general rule, however, it would appear that reverence for the dead was manifested in other ways than by depositing costly gifts in the grave; nor do the relics found indicate any belief akin to that which induces the modern Indian to lay beside his buried chief the arms and weapons of the chase, for use by him in the future hunting-grounds or on the war-path. In some cases the simple sarcophagus has been constructed of stone instead of wood; in others the body appears to have been merely wrapped in bark or matting. In some of the Southern States both cremation and urn-burial seem to have been practised, but throughout the valleys of the Ohio and its tributaries a nearly uniform system of sepulchral rites has been traced. These no doubt bore some important relations to the solemn religious observances indicated by other works of the same people; and as it is not in the sepulchral mounds, but in those which cover the "altars" on which

the sacrificial fires of the ancient worshippers appear to have often blazed, that the greater number of their works of art, and even their implements and weapons have been found: it may be that there, rather than at the grave-mounds, they propitiated the manes of the dead, and sought by sacrifices of love and reverence to reach beyond this world to one unseen.

Groups of four, five, or six sepulchral mounds are common, where a central one of from twenty to thirty feet high is surrounded by smaller ones. Contrary, however, to what would be expected from a people, whose earthworks are constructed on so large a scale in regular geometrical figures: such mound groups appear never to have been symmetrically arranged. But their mode of grouping presents certain analogies to the arrangements of cists and cinerary urns in ancient British tumuli, which suggest the probability of human sacrifices, and a suttee self-immolation at the grave of the great chief, so congenial to the ideas of barbaric rank. Such cruel rites we know were practised among the Mexicans and Peruvians on the largest scale; wives, concubines, and attendants being immolated by the latter on the tomb of their deceased Inca, in some cases even to the number of thousands. If, therefore, we suppose the sepulchral mound to indicate by its proportions the rank or popular estimation of the deceased, then the relative sizes and distances from the great central mound may have reference to the degrees of rank in the wife, favourite concubine, or official attendant; while humbler victims, menials, and slaves, would be left to mingle with the common earth, with no memorial to perpetuate the costly sacrifice of their life's blood in celebration of the obsequies of their chief.

Such ideas, as we have already seen, pertain to the Indian tribes of the present day, no less than to the ancient civilized races of the New World. They are indeed singularly consonant to the rude conceptions of a future state realized by the untutored mind in all ages, when left to the unaided light of nature, which perpetuate in a future life the habits, duties, and social distinctions of earth. The smallest of a group of mounds in the Scioto Valley contained the skeleton of a girl, enveloped in matting or bark, like those of the larger mounds; but no systematic exploration of an entire group has yet been made. This, if carefully executed, with a minute record of the contents of each mound, might reveal the origin of such groups, and the significance of their various sizes and relative positions: which can scarcely be supposed to be with-

out some meaning among a people who constructed their sacred and civic enclosures with such geometrical precision.

The Grave Creek Mound, at the junction of Grave Creek with the Ohio river, in the State of Virginia, commands, on various accounts, a prominent distinction among the sepulchral monuments of America. It occupies a site on an extensive plain in connexion with works now much obliterated; but its own gigantic proportions bid effectual defiance to the operations which are rapidly erasing less salient records of the ancient occupants of the soil. In the year 1838, when various circumstances combined to direct an unusual degree of attention to American antiquities, Mr. Tomlinson, the proprietor of the land, had it explored at considerable cost. A shaft sunk from the top, and a tunnel carried to the centre, disclosed two sepulchral chambers, one at the base, and another thirty feet above. They had been constructed, as in other cases, of logs, which had decayed, and permitted the superincumbent earth, with stones placed immediately over them, to fall upon the skeletons. In the upper chamber a single skeleton was found in an advanced state of decay, whilst the lower one contained two skeletons, one of which was believed to be that of a female. Beside these lay between three and four thousand shell-beads, a number of ornaments of mica, several bracelets of copper, and sundry relics of stone carving, referred to, along with works of art from other ancient mounds, in a future chapter. But among them was included an inscribed stone disc, which—if its genuineness could be satisfactorily authenticated,—constitutes perhaps the most marvellous of all American antiquities. On reaching the lower vault, after removing its contents, it was determined to enlarge it into a convenient chamber for visitors, and in doing so ten more skeletons were discovered, all in a sitting posture, but in too fragile a state to admit of preservation. The position of these, immediately around the sepulchral chamber, in the very centre of the mound, precludes all idea of subsequent interment, and scarcely admits of any other mode of accounting for their presence than that which the human sacrifices both of ancient and modern American obsequies suggest.

A tumulus of the gigantic proportions of the Grave Creek Mound serves emphatically to impress the mind with the fact that such structures, even when of smaller dimensions, were no accompaniments of common sepulture, but the special memorials of distinguished chiefs; or, it may be, at times, of venerated priests who

had presided over the long-forgotten rites of the sacred enclosures and buried altars. Of the busy population that once thronged the valleys of the West we have no other memorials than those which commemorate the toil of many to give a deathless name to one now as nameless as themselves. The investigators of their works, after describing in detail the monumental mounds, remark: "The graves of the great mass of the ancient people who thronged our valleys, and the silent monuments of whose toil are seen on every hand, were not thus signalized. We scarcely know where to find them. Every day the plough uncovers crumbling remains, but they elicit no remark; are passed by and forgotten. The wasting banks of our rivers occasionally display extensive cemeteries, but sufficient attention has never been bestowed upon them to enable us to speak with any degree of certainty of their date, or to distinguish whether they belonged to the Mound-Builders or a subsequent race. These cemeteries are often of such extent as to give a name to the locality in which they occur. Thus we hear, on the Wabash, of the 'Big Bone Bank' and the 'Little Bone Bank,' from which, it is represented, the river annually washes many human skeletons, accompanied by numerous and singular remains of art, among which are more particularly mentioned vases and other vessels of pottery, of remarkable and often fantastic form. At various places in the States, north of the Ohio, thousands of graves are said to occur, placed in ranges parallel to each other. The extensive cemeteries of Tennessee and Missouri have often been mentioned, and it has been conjectured that the caves of Kentucky and Ohio were grand depositories of the dead of the ancient people."[1] The Ohio and Erie canal is carried for miles along the river-terrace of the Scioto Valley, in the vicinity of Chillicothe, where the ancient works of the Mound-Builders are more abundant than in any other area of equal limits hitherto explored. In some cases the canal has been cut through them, and it can scarcely admit of doubt that many interesting traces of the arts and habits of the remarkable people who once filled the long-deserted scene, must have been disclosed to heedless eyes. Here and there, doubtless, a stray relic was picked up, wondered at, and forgotten; but no note was taken of the circumstances under which it was found, and no record made of the discovery. And so must it ever be. The pioneers of civilisation in the uncleared wilds of the West are too entirely preoccupied with the

[1] *Ancient Monuments of the Mississippi Valley*, p. 171.

present, to spare a thought for long forgotten centuries. To their indomitable energy it is due that others can enter upon their labours with leisure for such thoughts; and that, through a fortunate combination of circumstances, such abundant and accurate data have been preserved relative to prehistoric ages of America.

Various classes of mounds, probably also of a sepulchral character, have been subjected to exploration, with results differing from those which admit of the strict classification already referred to. More extended and systematic observations will, in all probability, group into new classes some that appear at present entirely anomalous. But the most noticeable indications suggest that cremation may have been commonly practised among the ancient Mound-Builders; or that a custom somewhat analogous to the scaffolding and final sepulture of the bones of the dead, as practised among many Red Indian tribes, may have prevailed; and that the bones thus periodically gathered were burnt, with fitting and solemn rites, and their ashes heaped together, forming mounds, such as one opened on the bank of Walnut Creek, in the Scioto Valley. The principal portion of this consisted seemingly of long-exposed and highly-compacted ashes, intermingled with specks of charcoal, and small bits of burned bones. Beneath this was a small mound of very pure white clay, resting on the original soil, without any traces of the action of fire; and over this the incinerated remains had been piled into a mound, nine feet in height by forty in base. The customs of the North American Indians, however, were, and still are very diverse; and among the ancient Mexicans and Peruvians also, inhumation, cremation, urn-burial, and mummification, accompanied with deposition in artificial vaults and in caves, were all practised. It need not therefore surprise us to find many exceptions among the ancient Mound-Builders to any practice recognised as most prevalent among them. Considering the decayed state of most of the bones recovered from the great sepulchral mounds, where they were equally protected from external air and moisture: if the common dead were inhumed under the ordinary little grave-mound, their bones must, for the most part, have long since returned to dust. Even if such be the case, however, the sites of their ancient cemeteries in all probability abound with many of the less destructible relics of stone, metal, etc., repeatedly found in the mounds; nor must it be overlooked in the latter, that the extremely comminuted state to which most of their enclosed skeletons have been reduced, when brought to

light by the modern explorer, is due, in part at least, to the falling in of a superincumbent mass of earth and stones upon them, when the timber ceiling of their sarcophagus had resisted the weight long enough only to render them the less able to resist its crushing force. The perfect preservation of the "Scioto Mound cranium," described by Messrs. Squier and Davis as "the only skull incontestably belonging to an individual of the race of the mounds which has been recovered entire, or sufficiently well preserved to be of value for purposes of comparison," was due to its being embedded in charcoal, over which a superstructure of large stones enveloped with tough yellow clay had been piled, without any treacherous timber vaults. It lay in the centre of the carbonaceous deposit, resting on its face. The lower jaw was wanting, and only the clavicle, a few cervical vertebræ, and some of the bones of the feet were huddled around it. Unaccompanied though it was by any relics of art, it is, in itself, one of the most valuable objects hitherto recovered from the American mounds. But, as will be seen from evidence referred to in a future chapter, it cannot now be correctly spoken of as the only indisputable illustration of the head-form of the ancient race.

Such are some of the traces we are able to recover of the sepulchral rites of this people. In discussing the conclusions suggested alike by their disclosures, and by those which the sacrificial mounds, the sacred enclosures, and the buried works of art reveal, we are dealing with the characteristics of a race pertaining to periods long preceding any written history. For us these are their sole chronicles; and yet, even from such data, we are able to deduce some traits of moral and intellectual character; and to infer the influence of sentiments of reverence for the dead, and hope beyond the grave. But perhaps the most important fact for our present purpose is the general absence of weapons of war among the sepulchral deposits. It accords with other indications of the condition of the Mound-Builders. They had passed beyond that rude stage of savage life in which war and the chase are the most honourable occupations of man, and the only conceivable enjoyments of his barbarian heaven. Their weapons of war, like their fortresses, were means for the defence of acquisitions they had learned to prize more highly. They had conquered the forests, and displaced the spoils of the hunter with the wealth of autumn's golden grain; and with the habits of a settled agricultural people, many new ideas had taken the place of the wild imaginings and

dark superstitions begotten of the forest's gloom. As among all agricultural nations, the seasons of seed-time and harvest doubtless had their appropriate festivals; and we can still, in imagination, reanimate their sacred enclosures and long-drawn avenues with the joyous procession bearing its thank-offering of first-fruits, or laden with the last golden treasures of the harvest-home. The analogies traceable through the customs and sacred rites of many nations help to depict for us such festive scenes: and in accordance with the changes of thought which such a social condition begets, the grave had ceased to be the mere passage from the chase and the warfare of forest life, to new hunting-grounds in a land haunted by the shadows of life's weary toils.

CHAPTER XII.

SACRIFICIAL MOUNDS.

MOUND ALTARS—ALTAR DEPOSITS—QUENCHING THE ALTAR FIRES—MOUND CITY—MILITARY ALTAR MOUNDS—THEIR STRUCTURE AND CONTENTS—UNCOVERED ALTARS—SIGNIFICANCE OF THEIR DEPOSITS—ANALOGOUS INDIAN RITES—TRANSITIONAL CIVILISATION.

THE name of sacrificial mounds has been conferred on a class of monuments, altogether peculiar to the New World, and highly illustrative of the rites and customs of the ancient race of the mounds. From their contents also we derive many of the most interesting examples of the arts of that singular people, preserved on the "altars," where they appear to have been deposited, along with burnt-offerings to the gods of the ancient faith, or designed as the sacrifices of affectionate devotion to the manes of the dead. This remarkable class of mounds has been very carefully explored, and their most noticeable characteristics are: their almost invariable occurrence within enclosures; their regular construction in uniform layers of gravel, earth, and sand, disposed alternately in strata conformable to the shape of the mound; and their covering a symmetrical altar of burnt clay or stone, on which are deposited numerous relics, in all instances exhibiting traces more or less abundant, of their having been exposed to the action of fire.

A sufficient number of sacrificial mounds has been opened to justify the adoption of certain general conclusions relative to their construction and the purposes for which they were designed. On the natural surface of the ground, in most cases, a basin of fine clay appears to have been modelled with great care, in a perfectly symmetrical form, but varying in shape, and still more in dimensions. They have been found square, round, elliptical and in the form of parallelograms; and, in size, range from a diameter of two feet,

to fifty or sixty feet long, and twelve or fifteen feet wide. The most common dimensions, however, are from five to eight feet in diameter. The clay basin, or "altar," as it has been designated, invariably exhibits traces of having been subjected to the action of fire, and frequently of intense and long-continued or oft-repeated heat. It is, moreover, evident that in some cases it had not only been often used; but, after being destroyed by repeated exposures to intense heat, it had been several times remodelled before it was finally covered over by the superincumbent mound.

Within the focus or basin of the altars are found numerous relics: elaborate carvings in stone, ornaments cut in mica, copper implements, disks, and tubes, pearl, shell, and silver beads, and various other objects, hereafter referred to, but all more or less injured by fire. In some cases the carved pipes and other works in stone, have been split and calcined by the heat, and the copper relics have been melted, so that the metal lies fused in shapeless masses in the centre of the basin. Traces of cloth completely carbonized, but still retaining the structure of the doubled and twisted thread; ivory or bone needles, and other objects indestructible by fire, have also been observed; and the whole are invariably found intermixed with a quantity of ashes. Large accumulations of calcined bones, including fragments of human bones, also lay above the deposits on some altars, or mingled with them; and in other cases a mass of calcined shells, or of fine carbonaceous dust, like that formed by the burning of vegetable matter, filled up the entire hollow. But while it is obvious from a few traces, that the deposits on the altars had included offerings of objects which yielded at once to the destructive element to which they were there exposed, as well as others capable in some degree of withstanding the intensity of the flame: there are only faint traces of all but the least destructible relics of stone or metal. In one mound portions of the contents were cemented together by a tufa-like substance of a grey colour, resembling the scoriæ of a furnace, and of great hardness. But subsequent analyses demonstrated that it was made up in part of phosphates, and a single fragment of partially calcined bone found on the altar was the patella of a human skeleton. The long-continued, and probably oft-repeated application of intense heat had reduced the cemented mass to this condition. A quantity of pottery, many implements of copper, and a large number of spear-heads chipped out of quartz and manganese garnet, were also deposited on the altar; but they were intermixed with much coal

and ashes, and were all more or less melted or broken up with the intense action of the fire. Out of a bushel or two of fragments of the spear-heads, and of from fifty to a hundred quartz arrow-heads, only four specimens were recovered entire. Fire also had been employed once more in the concluding rites, ere this altar was finally buried under its mound, on the banks of the Scioto: garnering the chronicles of a long-extinct past, until its recent exhumation to tell its tale of forgotten rites and religious services practised there by the ancient occupants of the Valley. Scattered over the deposits of earth filling one of the compartments, and resting upon the sides of the altar, were traces of a number of pieces of timber, four or five feet long, supposed by the explorers to have supported a funeral or sacrificial pile. They had been somewhat burned, and the carbonized surface preserved their casts in the hard earth, although the wood had entirely decayed. They had been heaped over while glowing, for the earth around them was slightly baked; and thus, after repeated, and perhaps long-protracted sacrificial rites, some grand final service had consummated the religious mysteries; and the blazing altar was quenched by means of the tumulus that was to preserve it for the instruction of future ages.

It thus appears that some of the altars remained in use for a considerable period, and were repeatedly renewed ere they were finally covered over. In one large mound, for example, one hundred and forty feet in length, by sixty feet in greatest breadth, already referred to as that in which so many quartz spear and arrow heads, with copper and other relics, were found; a new and smaller hearth was observed to have been constructed within the oblong basin of the original altar. In this all the relics deposited in the mound were placed, and the outer compartments of the large basin had been filled up with earth to a uniform level, the surface of which showed traces of fire. Upon attempting to penetrate the altar so as to ascertain its thickness, the task proved one of great difficulty owing to its extreme hardness; and when at length it was effected, the clay was found to be burnt to the depth of twenty-two inches. As such a result seemed one that could hardly be accounted for by the action of any degree of heat applied from above, a more minute examination led to the discovery that three successive altars had been constructed, one above another, in addition to the smaller hearth or focus which had received the final sacrificial offerings, ere it was buried under its enclosing mound. In other examples the altars have been observed to be

very slightly burned; but wherever such was the case, they have also been destitute of remains.

Along with the evidences of a uniformity of system and purpose in those remarkable structures, there is also considerable variety in some of their details; and one group may be selected, as on several accounts possessing peculiar features of interest. On the western bank of the Scioto, an ancient enclosure occupies a level terrace immediately above the river. In outline it is nearly square with rounded angles, and consists of a simple embankment, between three and four feet high, unaccompanied by a ditch, or any other feature suggestive of its having been a place of defence. It encloses an area of thirteen acres, within which are twenty-four mounds, including the large oblong one already referred to. The whole of these have been excavated, and found to contain altars and other remains, which prove beyond doubt that they were places of sacrifice, dedicated to religious rites, and not to sepulture. Here, therefore, was one of the sacred enclosures of the Mound-Builders: a temple of their long-forgotten faith, inroofed only by the azure vault of heaven, like the British temples of Avebury and Stonehenge. To this remarkable enclosure the name of "Mound City" has been given, and the results of its exploration prove it to have been one of the most remarkable scenes of ancient ceremonial in the Scioto Valley. It would almost seem as if here had been reared an altar to each god in the American pantheon; for not the least remarkable feature observed in reference to the altars of the mounds is, that they do not disclose a miscellaneous assemblage of relics, like the Indian's ossuary or grave-mound. On the contrary, the sacrificial deposits are generally nearly homogeneous. On one altar sculptured pipes are chiefly found, to the number of hundreds; on another, pottery, copper ornaments, stone implements, or galena; on others, only an accumulation of calcined shells, carbonaceous ashes, or burnt bones. A few altars have also been noticed, which, though much burned, have no deposit upon them, except a thin layer of phosphate of lime, which seems to have incorporated itself with the clay of which they are composed. Such was the case with three of those of "Mound City;" and it appeared to their explorers that, though repeatedly used, they had been carefully cleared of all their contents before being buried under the final mound. The altar of another mound of this enclosure was a parallelogram of the utmost regularity, measuring ten feet in length, by eight in width, and containing a deposit of fine ashes, with frag-

ments of pottery, from which the pieces of one beautiful vase were recovered and restored. With these also lay a few shell and pearl beads. In another oblong mound, the altar was an equally perfect square, but with a circular basin, remarkable for its depth, and filled with a mass of calcined shells. Another, though of small dimensions, contained nearly two hundred pipes, carved with ingenious skill, of a red porphyritic stone, into figures of animals, birds, reptiles, and human heads. In addition to these were also disks, tubes, and ornaments of copper, pearl and shell beads, etc., but all more or less injured by the heat, which had been sufficiently intense to melt some of the copper relics. The number and value of the objects found in this mound exceed any other single deposit; and some of them supply illustrations of great importance relative to the arts, habits, and probable origin of their makers. A like diversity marks the contents of other mounds, both within the sacred enclosure here referred to, and in others where careful explorations have been effected. In one, for example, the whole area was covered with two layers of disks of horn stone, some round and others oblong. Upwards of six hundred were taken out, and it was estimated that the entire deposit numbered little short of four thousand.

It thus appears that burnt-offerings and sacrifices by fire were practised as an important and oft-repeated part of the sacred rites to which the altar-mounds were devoted: and also that certain specific and varying purposes were aimed at in the offerings made on different altars. These altar-mounds are chiefly found within what appear to have been enclosures devoted primarily, if not exclusively, to religious purposes; but they also occur, generally, as single works, within the military strongholds: where it may be assumed they sufficed for sacrifices designed to propitiate the objects of national worship, and to win the favour of their deities, when the garrisons were precluded from access to the sacred enclosures where national religious rites were chiefly celebrated.

Within a quarter of a mile of "Mound City" a work of somewhat similar outline, but of larger dimensions, presents some of the characteristics of a defensive rather than a sacred enclosure. From its position, indeed, in relation to that remarkable circumvallated group of mounds, and other earthworks in the vicinity, its construction suggests the idea of a fortified site: not designed as a military stronghold, but as a walled town, wherein those who officiated at the sacrifices of the adjacent temple may have resided. Unlike the

slight enclosure of the latter, its walls are guarded by an outer fosse, and if surmounted by a palisade, or other military work, they were well suited for civic defence. The area thus enclosed measures twenty-eight acres; and nearly, if not exactly, in the centre there is a sacred mound, which covered an altar of singular construction, and with remarkable traces of sacrificial rites. It had undergone repeated changes throughout the period intervening between the first rites and ceremonies to which it was dedicated and that of its final inhumation, the traces of which are thus minutely recorded by its intelligent explorers:—"It seems to have been formed at different intervals of time, as follows:—First, a circular space, thirteen feet in diameter and eight inches in depth, was excavated in the original level of the plain; this was filled with fine sand, carefully levelled, and compacted to the utmost degree. Upon the level thus formed, which was perfectly horizontal, offerings by fire were made; at any rate a continuous heat was kept up, and fatty matter of some sort burned, for the sand to the depth of two inches is discoloured, and to the depth of one inch is burned hard and black, and cemented together. The ashes, etc., resulting from this operation were then removed, and another deposit of sand, of equal thickness with the former, was placed above it, and in like manner much compacted. This was moulded into the altar-form, identical with that of the circular clay altars already described: the basin in this case measuring seven feet in diameter by eight inches in depth. This basin was then carefully paved with small round stones, each a little larger than a hen's egg, which were laid with the utmost precision, fully rivalling the pavior's finest work. They were firmly bedded in the sand beneath them, so as to present a regular and uniform surface. Upon the altar thus constructed was found a burnt deposit, carefully covered with a layer of sand, above which was heaped the superstructure of the mound. The deposit consisted of a thin layer of carbonaceous matter, intermingled with which were some burnt human bones, but so much calcined as to render recognition extremely difficult. Ten well-wrought copper bracelets were also found, placed in two heaps, five in each, and encircling some calcined bones,—probably those of the arms upon which they were worn. Besides these were found a couple of thick plates of mica, placed upon the western slope of the altar."[1]

All the results of such investigations coincide in proving that the altars of the Mound-Builders were used for considerable periods,

[1] *Ancient Monuments of the Mississippi Valley*, p. 157.

and repeatedly renewed, before they were finally covered over. But others undoubtedly remained uncovered, though their exposure has necessarily left them in a very different condition from those now revealed for the first time to human eyes since the last rites of the ancient worshippers extinguished the sacred fires. These appear to have been noted from time to time under the name of "brick-hearths." The hard-burnt clay, cracked and broken up by the roots of trees, the action of frost, and other causes, and partially buried by the accumulating vegetation and decay of centuries, when brought to light by the plough or the spade, not unnaturally suggested the idea of rude brick pavings. One of these, discovered near the town of Marietta, in Ohio, was surrounded by a low bank, of about one hundred feet in circumference, seemingly the ground-plan or commencement of a mound. All such "hearths" or altars were, indeed, it may be assumed, destined to receive their final completion by means of the incovering mound. But, by whatever causes brought about, the day at length came when the dominion of the Mound-Builders drew to a close; and probably not less abruptly than that of the Aztecs of Mexico or the Incas of Peru. The sacred fires were extinguished, the uncovered altars were desecrated, and the primeval forest slowly resumed its sway over the deserted temples and silent cities of the dead. The exploration of the sacred mounds, however, has sufficed to show that the covering of the altar was a work of no less systematic care than any of the previous rites and ceremonies. The sepulchral mounds are simple earth-pyramids, sometimes elliptical or pear-shaped, but exhibiting in their internal structure no trace of any further design than to heap over the sarcophagus of the honoured chief such a gigantic tumulus as should preserve his name and fame to after times. It is altogether different with the sacred mounds. Their systematic construction of alternating layers of clay, fine sand, gravel, laminæ of mica, etc., is no less characteristic than their enclosed altars; and in both respects they reveal features to which nothing analogous has been observed in any tumuli of the Old World.

The investigation of this remarkable class of ancient works suggests many curious questions to which it is difficult to furnish any satisfactory answer. It is probable that not only each successive stage in the use and reconstruction of the altar, but in the building of the superincumbent mound, had its own significance and accompanying rites; and on these future discoveries may yet throw light. In one of the "Mound City" structures, after pene-

trating through four successive sand-strata, interposed at intervals of little more than a foot between layers of earth; and excavating altogether to a depth of nineteen feet: a smooth level floor of slightly burned clay was found, covered with a thin layer of sand, and on this a series of round plates of mica, ten inches or a foot in diameter, were regularly disposed, overlapping each other like the scales of a fish. The whole deposit was not uncovered, but sufficient was exposed to lead the observers to the conclusion that the entire layer of mica was arranged in the form of a crescent, the full dimensions of which must measure twenty feet from horn to horn, and five feet at its greatest breadth. After describing the peculiar features of this mound, its explorers remark: "Were we to yield to the temptation to speculation which the presence of the mica crescent holds out, we might conclude that the Mound-Builders worshipped the moon, and that this mound was dedicated, with unknown rites and ceremonies, to that luminary." It is obvious, at any rate, that very diverse rites were practised, and very different sacrifices offered up to the ancient deities of the Great Valley. In some, the accumulated carbonaceous matter, like that formed by the ashes of leaves or grass, might suggest the graceful offerings of the first-fruits of the earth, so consonant to the milder forms of ancient sacrifice instituted in recognition of the Lord of the Harvest. In others, the accumulation of hundreds of elaborately carved stone pipes on a single altar, is strikingly suggestive of some ancient peace or war pipe ceremonial, in which the peculiar American custom of tobacco-smoking had its special and sacred significance, and even perhaps its origin. In others again, we should perhaps trace in the deposition under the sacred mound of hundreds of spear and arrow heads, copper axes, and other weapons of war, a ceremonial perpetuated in the rude Indian symbolism of burying the tomahawk or war-hatchet. But, looking to the evidence which so clearly separates the sepulchral from the sacred mounds, it is scarcely possible to avoid the conclusion that on some of the altars of the Mound-Builders human sacrifices were made; and that within their sacred enclosures were practised rites not less hideous than those which characterized the worship which the ferocious Aztecs are affirmed to have regarded as most acceptable to their sanguinary gods. Among the Mexicans, if we are to believe the narratives of their Spanish conquerors, human sacrifices constituted the crowning rites of almost every festival. That great exaggeration is traceable in the narratives of the chronicles is ad-

mitted in part even by the enthusiastic historian of the conquest of Mexico; and the charming historical romance woven by Prescott, is perhaps even more open to question in its reproduction of the gross charges of cannibalism and wholesale butchery in the superstitious rites of the Mexicans: than in its gorgeous picturings of their architectural magnificence, their temples and palaces, sculptured fountains, floating gardens, and all the strange blending of Moorish pomp and luxury, with the refinements of European social manners, and the unreserved freedom of woman.

Nothing corresponding to the geometrical enclosures or altar-mounds of the Mississippi Valley appears among the works of any Indian nation known to Europeans. Nevertheless in searching for evidence of their ethnical affinities, we are naturally led to inquire if no traces of their peculiar rites and customs can be detected in the ruder practices of savage nations found in occupation of their deserted sites; and some of those in use by different Indian tribes undoubtedly suggest ideas such as may have animated the ancient people of the valley in the construction and use of their mounds of sacrifice. One class of mound-relics, for example, is thus illustrated in Hariot's narrative of the discovery of Virginia in 1584. He describes the use of tobacco, called by the natives *uppówoc*, and greatly enlarges on its medicinal virtues. He then adds: "This *uppówoc* is of so precious estimation amongst them that they think their gods are marvellously delighted therewith, whereupon sometime they make hallowed fires, and cast some of the powder therein for a sacrifice." The discovery of unmistakable evidence that one of the sacred altars of "Mound City" was specially devoted to nicotian rites and offerings, renders such allusions peculiarly significant. In the belief of the ancient worshippers, the Great Spirit smelled a sweet savour in the smoke of the sacred plant; and the homely implement of modern luxury became in their hands a sacred censer, from which the vapour rose with as fitting propitiatory odours as that which perfumes the awful precincts of the cathedral altar, amid the mysteries of the Church's high and holy days.

It is indeed a vague and partial glimpse that we recover of the old worshipper, with his strange rites, his buried arts, and the traces of his propitiatory sacrifices. But slight as it is, it reveals a condition of things diverse in many respects from all else that we know of the former history of the New World; and on that account, therefore, its most imperfect disclosures have an interest for us

greater than any discoveries relating to the modern Indian can possess. Still more is that interest confirmed by every indication which seems to present the ancient Mound-Builders as in some respects a link between the rude tribes of the American forests and prairies, and those nations whom the first Europeans found established in cities, under a well-ordered government, and surrounded by many appliances of civilisation akin to those with which they had been long familiar among the most ancient nations of southern Asia. To the great centres of native progress still manifest in the ruined memorials of extinct arts in Central America, and illustrated by so many evidences of national development attained under Aztec and Inca rule, the attention of the inquirer into the ancient history of the New World must be finally directed in his desire for some clear comprehension of whatever was essentially native to it. But before turning southward to those seats of a well-ascertained native civilisation, there still remains for consideration, one other class of earthworks, of a very peculiar character. The mineral regions from whence the Mound-Builders derived their stores of copper have been described, and their disclosures of ancient mining and metallurgy considered. But between them and the populous valleys of the Ohio, an extensive region intervenes, abounding in monuments no less remarkable than some of those already described; and valuable as a possible link in the detached fragments of ancient chroniclings revealed by such means. Lying as they do in geographical, and perhaps also in other relations, immediately between the old regions of the Mound-Builders and the Miners of ante-Columbian centuries, they cannot be overlooked in any archæological researches into the history of the New World.

CHAPTER XIII.

SYMBOLIC MOUNDS.

THE WISCONSIN REGION—ANIMAL MOUNDS—ABSENCE OF ENCLOSED RELICS—MOUND-DEVICES—DADE COUNTY WORKS—INDIAN TOTEMS—THE NORTHERN AZTALAN—ANCIENT GARDEN BEDS—A SACRED NEUTRAL LAND—ANCIENT MOUNDS OF OHIO—THE ALLIGATOR MOUND—THE GREAT SERPENT OF ADAM'S COUNTY, OHIO—ANIMAL MOUNDS IN INTAGLIO—INFERENCES DEDUCIBLE AS TO THE ANCIENT RACES IN NORTH AMERICA.

THE well-watered region which stretches westward from Lake Michigan to the Mississippi, was occupied until recently by a comparatively dense Indian population; and even now affords shelter to the remnants of native tribes. But besides the traces of their ephemeral dwellings and graves, it abounds with earthworks of a highly distinctive character, altogether peculiar to the New World. But of this as of other partially explored regions of the West, the earlier accounts were vague and contradictory; and it is only very recently that the characteristics of its monuments have been accurately defined. Mr. J. A. Lapham, to whose *Antiquities of Wisconsin surveyed and described*, the minute knowledge of these remarkable earthworks is chiefly due, claims to have first described the Turtle Mound at Waukesha and other animal effigies of the same territory, so early as 1836. These notices, however, only appeared in local newspapers; and general attention was for the first time directed to them by Mr. R. C. Taylor in the *American Journal of Arts and Sciences*, in 1838. Their peculiar character was thereby perceived, and such general interest awakened, that the American Antiquarian Society was induced to place funds at Mr. Lapham's disposal for carrying out the elaborate surveys since published.

The occurrence of "Animal Mounds" is by no means exclusively confined to the State of Wisconsin. Some examples are specially worthy of notice as mingling among the varied earthworks of the Ohio and Scioto Valleys. But the important fact

connected with the aboriginal traces of Wisconsin is that its Animal Mounds do not occur interspersed, as in the Ohio Valley, with civic and sacred enclosures, sepulchral mounds, and works of defence; but within its well-defined limits, thousands of gigantic basso-relievos of men, beasts, birds, and reptiles, all wrought with persevering labour on the surface of the soil, constitute its distinguishing characteristic, and disclose no evidence of their construction with any other object in view than that of perpetuating their external forms. The vast levels or slightly undulating surfaces of prairie land present peculiarly favourable circumstances for the colossal relievos of the native artist: yet not more so than are to be met with in other localities where no such mounds occur. It is important therefore to bear in remembrance that defensive or military structures, and such as are apparently designed for sacrificial rites or religious ceremonies, are scarcely to be met with in the territory marked by those singular groups of imitative earthworks. The country, moreover, is well adapted for maintaining a large population, in very diverse stages of social progress. Through its gently undulating surface numerous rivers and streams flow in sluggish, yet limpid current, eastward and westward, to empty themselves into Lake Michigan or the Mississippi. The pools and groups of lakes into which they expand, furnish abundance of wild rice, which is at once a means of sustenance to numerous aquatic birds, and also constituted an important source of supply to the aborigines, so long as they held possession of the territory. The rivers and lakes also abound with excellent fish; and where the soil remains uninvaded by the ploughshare of the intruding settler, numerous traces of older agricultural labour show where the Indians cultivated the maize, and developed some of the industrial arts of a settled people. Indian grave-mounds diversify the surface, and enclose ornaments and weapons of the rude nomades that still linger on the outskirts of that western state. But such slight and inartificial mounds are readily distinguishable from the remarkable structures of a remoter era which constitute the archæological characteristic of the region. Here, indeed, as elsewhere, the Indian has frequently selected the ancient mound as the most suitable site for his simpler sepulchral works, which by the very contrast they present to the gigantic devices of the old Mound-Builder, serve more clearly to indicate the complete independence of the two.

In describing some of the mounds near Horicon, on the Rock

River, Mr. Lapham speaks of them as at once the most extensive, and most complicated and intricate earthworks surveyed by him. Of one form of mound which he conceives to represent the otter, seven examples occur; illustrations are given of sixteen cruciform earthworks; and of the ordinary circular mounds about two hundred have been counted. While some of those are small, others are on a gigantic scale. There is one mound of peculiar but indeterminate form, which tapers for a length of five hundred and seventy feet. At its smaller extremity or tail, it slightly curves to the east. At its opposite extremity or head, there occurs a large cross, and one of the largest circular mounds. One figure is named appropriately enough, "The Tobacco-Pipe Mound," from its obvious resemblance to that characteristic American implement. On several of the mounds of another group the surveyors noticed recent graves of the Potawattomies; and Mr. Lapham adds: "The larger and more conspicuous mounds are generally selected by the Indians for the burial of their dead."

The sites of these works correspond to those adopted by the Mound-Builders of the more southern river-valleys. Within the well-watered region enclosed by the great lakes and the Mississippi, a numerous population may have long dwelt undisturbed, in the enjoyment of the profusion which wood and water and the easily cultivated soil supplied. On the bluffs and terraces surmounting the rivers and lakes, by means of which facilities of communication with the surrounding territory, and with more distant regions, were commanded, the earthworks are found in extensive and evidently dependent groups. But, unlike the rich memorial mounds of the Scioto Valley, they reveal scarcely any enclosed relics to chronicle the history of their erection, and throw light on the race of artists who laboriously diversified the natural landscape with such devices. In a few cases, human remains have been found in them, under circumstances which did not clearly point to a modern date; but in summing up the results of his explorations, Mr. Lapham remarks:—"So far as I have had opportunity to observe, there are no original remains in the mounds of imitative form, beyond a few scattered fragments that may have gained a place there by accident. Many of the mounds have been entirely removed, including the earth beneath for a considerable depth, in the process of grading streets in Milwaukee; and it is usually found that the natural surface had not been disturbed at the time of the erection, but that the several layers or strata of mould, clay, gravel, etc., are

continuous below the structure, as on the contiguous grounds. Great numbers of the smaller conical tumuli are also destitute of any remains; and if human bodies were ever buried under them, they are now so entirely 'returned to dust' that no apparent traces of them are left. If we assume that each mound was a place of burial, we must infer, from the absence of utensils, that the common practice of depositing with the dead the implements to be used in the other world, is of comparatively recent origin, since some of these, at least, would have resisted decay."[1]

The great earthwork-figures, wrought in relievo on the surface of the Wisconsin soil, include among their devices the lizard, turtle, elk, buffalo, bear, fox, otter, racoon, and other animals. Such, at least, are the designs which modern fancy has recognised in those works of primitive art. The frog also appears; birds and fishes are repeatedly represented; and man himself figures among the strange groups. Nor are the imitations confined to animate subjects, though the prevalence of these has suggested the designation of "animal mounds," as suitable for the whole. Embankments occur in the form of crosses, crescents, angles, and straight lines; and also seemingly as gigantic representations of the war-club, tobacco-pipe, and other familiar implements or weapons. Some of the crosses and other simpler forms probably originally represented animals, birds, or fishes, with extended wings or fins. But in those, as in the better-defined animal mounds, time has doubtless obliterated the minuter touches of the ancient modeller, and effaced indications of his original meaning.

One remarkable group, repeatedly described, occurs about eighteen miles west of the "Four Lakes," in Dade County, Wisconsin; and includes six quadrupeds, six parallelograms, one circular tumulus, one human figure, and a small circle. But neither from figures nor description can any more definite idea be drawn, than that the first of those represent quadrupeds, varying in size from ninety to one hundred and twenty feet, but either so rudely executed, or so much defaced, that they may be "buffalos," or "bears," or indeed any other animals. They are grouped in two rows on the surface of a high, open prairie, on the dividing ridge between the Rock and Wisconsin Rivers. Midway, an elevated conical mound, probably erected for the purpose, affords the only point from whence the entire group can be surveyed. In this as in other groups, it can scarcely admit of doubt that the original

[1] *Antiquities of Wisconsin*, p. 80.

relation of the several members was something more than mere juxtaposition; but an ingenious critic, in reviewing Messrs. Squier and Davis's notice of the Dade County works, thus outstrips their attempts at interpretation of the dubious "bears" or "buffalos:"—"It occurs to us that the group is the very intelligible representation of a sledge with its rider, and a train of six dogs, wheeling round the conical mound, which action is particularly represented by the last animal being in a position almost at right angles with the man, behind whom are the oblongs to represent the vehicle, and also with the remainder of the animals. Taking the rudeness of the age and workmanship into account, the impracticability of the material, and the scale and material, the whole is really not a bad representation of the dog-drawn sledges of the Kamschatdales of the present day. Supposing their horns to have been omitted, from the impracticability of raising earthworks that would stand well, and in proportion to represent them, they might have signified the elk or the reindeer. Whatever animal, however, be taken, it is perhaps a legitimate inference that we have here the colossal trophy of a successful super-Atlantic charioteer at some American race; why not the curious hippodrome, or, more correctly here, cynodrome, with its starting-cells (carceres), its course, its meta, and road of triumph to the town?"[1]

It was not necessary for the fanciful interpreter to resort to remote Kamschatka for the model of his dog-drawn sledge, for such are common enough among the Indians of the North-west. But basso-relievos that admit with equal probability of their determination as buffalos, bears, dogs, or elks, yield little trustworthy information; and a general survey of the earthworks of Wisconsin in no degree tends to confirm such modes of interpretation. But while rejecting this classical reading of the emblematic mounds of the West, it is not because their rude representations appear to be unfit memorials of any triumph analogous to those for which trophies were reared in the classic arena. Fully to appreciate the magnitude of the Dade County group, we must bear in remembrance the proportions of the supposed charioteer. He is figured, as is usual in similar mounds, with his limbs extended, and with arms of disproportionate length; possibly owing to the design originally representing some implement in each hand. From head to foot he measures one hundred and twenty-five feet, and one hundred and forty feet from the extremity of one arm to that of the other. The

[1] *Journal Brit. Archæol. Association*, vol. v. p. 411.

head alone is a mound twenty-five feet in diameter, and nearly six feet in highest elevation from the surrounding soil. Measuring the whole by this scale, it is abundantly apparent that a group, including altogether fifteen mound-figures, must have been a work of immense time and labour, and doubtless owed its origin to some motive or purpose of corresponding magnitude in the estimation of its constructors.

Mr. Schoolcraft, to whom no problem of America's prehistoric times appears to suggest any insoluble difficulties, solves the whole mystery of the emblematic mounds by assuming them to be the Totems, or heraldic symbols in use among the Indian tribes, thus reproduced in earthworks on a gigantic scale. "The connexion," he remarks, "of the animal mounds of Wisconsin with the existing totemic system of the Indians who are yet on the field of action, is too strong to escape attention. But the system of names imposed on the men composing the Algonquin, Iroquois, Cherokee, and other nations, a fox, a bear, a turtle, etc., is fixed upon as a badge or stem, from which the descendants may trace their parentage. To do this the figure of an animal is employed as a heraldic sign or surname. This sign is called in the Algonquin, town-mark or totem. A tribe could leave no more permanent trace of an esteemed sachem, or honoured individual, than by the erection of one of these monuments. They are clearly sepulchral, and have no other object but to preserve the names of distinguished actors in their history."[1] Thus by the aid of superficial resemblances all mystery and difficulty are evaded. But, meanwhile, exploration seems to prove that the emblematical mounds of Wisconsin are not sepulchral; while any correspondence that may be traced between the totemic symbols of tribes once as widely spread as the Algonquins, Iroquois, and Cherokees, only increases the mystery of such ancient symbols, constructed on this colossal scale, and confined to a territory so limited and well defined. So far indeed is a careful survey from confirming any such convenient and summary fancy, that Mr. Lapham states, as the result of his elaborate explorations, that he conceives four epochs are traceable in the history of the locality, two of which at least preceded the era of occupation by the Indian tribes. There is the period of the animal-mound builders, strikingly contrasting, in the total absence of enclosed works of art, with the earthworks previously described. But the few implements discovered are full of interest from their

[1] *History of Indian Tribes*, vol. i. p. 52.

obvious resemblance to those of the Mound-Builders. Several of the large hornstone discs which I have seen are of the same type as those found in immense numbers in the Ohio Mounds, and approximating alike in form and size to the flint implements of the drift. Mr. Albert H. Hoy of Racine, Wisconsin, describes in a letter to me the discovery of about thirty of the same relics, in that vicinity, under circumstances suggestive of great antiquity. They lay at a depth of eight feet in undisturbed soil, under a thin bed of peat, in what appeared to have been the ancient bed of the Rock River.

The extensive works at Aztalan, on the west branch of this river, present analogies of a different kind to the sacred and civic enclosures of the Mound-Builders. They constitute, it is believed, the only ancient enclosure, properly so called, throughout the whole region of the emblematic mounds; and, under the name of the "ancient city of Aztalan," were long regarded as one of the wonders of the western world. This name was given by its first surveyor, N. F. Hyer, in the belief that here possibly were the remains of a city of that northern Aztalan, from whence, according to the traditions of the Aztecs, the ancestors of the Mexican people derived their origin. On such a basis, credulity and wilful exaggeration soon reared magnificent ruins. Walls of brick still sustained by their solid buttresses; a subterranean vault and stair-way discovered within one of its square mounds; a subterranean passage, arched with stone; bastions of solid masonry, and other features of the like kind: were all made to correspond with the supposed mother-city of the Aztecs, and the cradle-land of America's native civilisation. On being subjected to accurate survey, all those wondrous features vanish like cloud-castles of the dawn. Freed, however, from such exaggeration and falsehood, the Aztalan works still present remarkable characteristics. An area of seventeen acres on the banks of the Rock River is enclosed on three sides by earthworks of peculiar form. They consist of a vallum with regular "bastions" as they have been termed, although both the construction of the walls, and the site of the enclosure—commanded as it is by elevated land on nearly every side,—preclude the idea of its having been a place of defence. Large, square, terraced mounds occupy the northern and southern angles, and in the former of these a human skeleton was found. It appeared to have been wrapped in cloth, the texture of which was open like the coarsest linen fabric. It is not probable, however, that either this, or

numerous fragments of coarse pottery taken from other mounds, bear any relation to the original builders of Aztalan. Careful and elaborate excavations by more recent explorers have been equally fruitless; and cuttings made in some of the largest of a remarkable range of tumuli outside the enclosures, revealed only ashes, mingled with charcoal and fragments of human bones; but brought to light no single work of art, like those which confer so graphic an interest on the mounds of the Ohio Valley.

Assuming the great works of Aztalan and the animal mounds of Wisconsin to belong to the same period: Mr. Lapham assigns the conical mounds to a later era. These he regards as built for sepulchral purposes, and exhibiting, both in construction and materials, the workmanship of a greatly inferior race of builders. Next come what are designated by the modern settlers "ancient garden beds," consisting of low, broad, parallel ridges, as if corn had been planted in drills. They average four feet in width, and the depth of the walk between them is six inches. These appearances indicate a more perfect system of agricultural operations than anything known to have been practised by the modern Indian tribes; but, at the same time, they are no less distinctly disconnected with the construction of the ancient mounds. Where these occur within a cultivated area, the parallel ridges of the old cultivators are carried across them in the same manner as over any undulation in the adjacent ground. It is obvious, therefore, not only that the emblematic earthworks preceded them, but that they had neither sacredness nor any special significance in the eyes of the cultivators of the soil. Probably, indeed, such traces of agricultural operations belong to a greatly more modern period.

What, then, are the inferences to be drawn from the ancient monuments peculiar to the territory lying immediately to the south of the great copper region of Lake Superior? They are mostly of a negative character, yet not on that account without significance and value. If we assume the existence of contemporary nations in Wisconsin and the Ohio valley in the period of the Mound-Builders, the chronicles of that prehistoric era exhibit them to us in striking contrast. In the one region every convenient height is crowned with the elaborate fortifications of a numerous and warlike people; while, on the broad levels of their river-terraces, ingenious geometrical structures prove their skill and intellectual development as applied to the formation of civic and temple enclosures. Their sacred and sepulchral mounds, in like manner,

reveal a cultured artistic skill, and a singular variety in the rites and customs exacted in the performance of their national worship. Turning to the northern area, all is changed. Along the river-terraces we look in vain for military structures, and, with one remarkable exception, for sacred enclosures. The mounds disclose no altars rich with the metallurgic and mimetic workmanship of their builders; but, on the contrary, the sole traces of imitative art occur in the external forms of earthworks, the exploration of which confutes the idea of their having been constructed over either grave or altar, and reveals no other purpose connected with their origin.

When it is considered that, along with the mica of the Alleghanies, the shells of the Gulf of Mexico, and obsidian from the ancient centre of American civilisation, the copper of Lake Superior is one of the most abundant materials found in the Mississippi mounds: we are tempted to trace some intimate relation between the warlike occupants of the Ohio and Scioto valleys, and the singular race who dwelt in peaceful industry on the well-watered and plentifully stocked plains to the south of the copper region, and there constructed their strange colossal memorials of imitative art. The country seems peculiarly adapted by nature as a central neutral land for the continent to the east of the Rocky Mountains. On the east it is guarded by Lake Michigan, and on the north by the great inland sea which constitutes the fountain of the whole lake and river chain, that sweeps away on its course of twenty-five hundred miles, over the mighty leap of Niagara, and through the islands and rapids of the St. Lawrence, into the Atlantic. On the west, with its infant streamlets originating almost from the same source, the Mississippi rolls onward in its majestic course, receiving as its tributaries the great rivers which rise alike on the western slope of the Alleghanies and the eastern declivities of the Rocky Mountains, and losing itself at length in the Gulf of Mexico. This wonderful river-system, and the great level contour of the regions which it drains, exercised a remarkable influence on the extinct civilisation of America, as well as on later Indian nomade life, making it so different from any of the old or newer centuries of Europe's history. The Indians who traded with Cartier at Tadousac, on the lower St. Lawrence, and those whom Raleigh met with on the southern coast of Carolina, obtained their copper from the same northern region towards which the head-waters of the Mississippi and the St. Lawrence converge; while the world of

Europe between the Rhine and the Baltic remained, even in its late Roman era, almost as much apart from that on its Mediterranean shores as the America of centuries before Columbus. It seems, therefore, not inconceivable that the prairie land of Wisconsin derives some of its archæological characteristics from its relation to the physical geography of the region between the Rocky Mountains and the Atlantic. It may have been a sacred neutral ground attached to the metallurgic region of Lake Superior, like the famous pipe-stone quarry of the Couteau des Prairies. Its singular characteristics are not inconsistent with its possession by a privileged caste, or tribe, like the Levites of ancient Palestine, recognised by others as consecrated to religious services and the rites of peace. But who shall venture to lift the curtain, which is itself the sole picture visible to our eyes? Future disclosures may, indeed, greatly enlarge our knowledge; but meanwhile we must be content to limit speculation to the confines of existing evidence, and aim at clearly discriminating between fact and fancy.

But this idea of some peculiar relations connecting the symbolic architects of Wisconsin with the Mound-Builders of the Ohio, derives confirmation from the few but remarkable animal mounds of the latter, in which their connexion with the religious rites of the ancient race is fully borne out. One example occupies a high level terrace on the west bank of the Scioto River, surrounded by an oval embankment measuring four hundred and eighty feet in greatest diameter. On the south side a space of about ninety feet wide breaking the continuity of the embankment, is covered by a long exterior mound, leaving two avenues of approach where it overlaps the inner oval. Within this is the large symbolic mound, only differing from those of Wisconsin in its circumvallations. It has not been opened; but in the progress of excavating the Ohio canal, large quantities of mica, similar to what occurs so abundantly in the sacrificial mounds, were found in its immediate vicinity.

The same canal intersects Newark earthworks; and there, within another elliptic vallum, is the great bird-mound, measuring 155 feet in length of body, and 200 feet between the tips of the wings. It is only one feature of a remarkable group, already described, which includes geometrical enclosures, mounds, and avenues; but it is distinguished from all the others, by the great height of the enclosing walls, and an interior ditch seven feet deep and thirty-five feet wide. In the centre of an enclosure measuring thirty acres, guarded by imposing circumvallations, and under the

shadows of gigantic trees, rises this remarkable animal-mound, with its head pointing directly to the eastern avenue. It has been opened, and found to cover a sacrificial altar, but unfortunately no record exists of any relics discovered within it. The fact, however, illustrates the contrast between works bearing so much external resemblance to each other as the symbolic mounds of the Mississippi Valleys and those of Wisconsin: which, in the absence of all included relics of worship or inhumation, seem but as symbols of the rites practised by the southern Mound-Builders.

About six miles higher up the same valley, the "Alligator," of Licking County, attracts attention as another remarkable example of the colossal animal-mounds of the New World. It occupies the summit of a hill or spur nearly two hundred feet high, which projects boldly into the Racoon Creek Valley; and from the symmetrical form of its elevated site, it appears to have been rounded in the process of excavating the materials with which to model the huge lizard-mound. In it as in some other examples, traces are still apparent suggestive of a minuteness of finish now only very partially discernible. The outline of the figure is clearly defined. Its average height is fully four feet, but the head, shoulders, and rump are elevated in some parts to a height of six feet; an attempt having evidently been made to preserve the contour and relative proportions of the animal represented. The ends of the paws are broader than the limbs, as if the spread of the toes had been originally indicated, and the tail curves off to the left side, so as to give its full proportions within the limits of its elevated site. The total length from the point of the nose to the end of the curved tail is about 250 feet. Upon the inner side of the effigy a raised circular space, designated the altar, is covered with stones which have been much exposed to the action of fire; and from this a graded way, ten feet broad, leads to the top. Excavations made at various points have only sufficed to show that the framework of the figure is composed of stones of considerable size, upon which the superstructure has been modelled in fine clay.

The site of this remarkable monument commands a view of the entire valley for eight or ten miles, and is by far the most conspicuous point within that limit. An ancient fortified hill stands about three-fourths of a mile distant on a spur of the same range of heights; and another entrenched hill nearly faces it on the opposite side of the valley. Numerous mounds are visible, both on the hill-tops and in the level bottom; and it is only the luxuriant

growth of the still uncleared forest which conceals the great Newark group, with its numerous geometrical enclosures, parallels, and mounds. The Alligator Mound may, therefore, be assumed to symbolize some object of special awe or veneration, thus reared on one of the chief high-places of the nation; with its accompanying altar, on which the ancient people of the valley could witness the celebration of the most popular rites of their unknown worship. Its site was obviously selected as the most prominent natural feature in a populous district abounding with military, civic, and religious structures. Yet its imposing proportions are surpassed by another symbolic work constructed on a height remote from any traces of ancient settlement.

The Great Serpent of Adam's County, Ohio, occupies the extreme point of a crescent-formed spur of land formed at the junction of two tributary streams of the Ohio. This elevated site has been cut to a conformity with an oval circumvallation on its summit, leaving a smooth external platform ten feet wide, with an inclination towards the embankment on every side. Immediately outside the inner point of this oval is the great serpent's head, with distended jaws, as if in the act of swallowing what, in comparison with its huge dimensions, is spoken of as an egg, though it measures 160 feet in length. Conforming to the summit of the hill, the body of the serpent winds back, in graceful undulations, terminating with a triple coil at the tail. The figure is boldly defined, the earth-wrought relievo being upwards of five feet in height by thirty feet in base at the centre of the body; and the entire length, following its convolutions, cannot measure less than a thousand feet.

This singular monument stands alone, and though classed here with the symbolic animal-mounds of Wisconsin, it has no analogue among the numerous basso-relievos wrought on the broad prairie-lands of that region. It is indeed altogether unique among the earthworks of the New World, and without a parallel in the Old: though it has not unnaturally furnished the starting-point for a host of speculations relative to serpent-symbols of Egypt, Assyria, and Greece; the supposed symbolism of Celtic superstitions in the megalithic structures of Avebury and Carnac; and the serpent in combination with the circle, egg, and globe, among the predominant devices on ancient temples of Egypt and India, as well as of Central America. Mr. Squier has devoted a special volume to the working out of this fascinating subject of "the Serpent Symbol" in its New World aspects; but his ingenious speculations do not lead to more

tangible results than those which employed the fanciful pen of Stukely, or delighted Toland and Davis in the belief that they were fathoming the mysteries of the Celtic Druids.

One other class of the imitative mounds of Wisconsin admits of comparison with primitive monuments of the British Isles. The earthworks hitherto described are in bold relief; but on the Indian prairie, a few miles from the city of Milwaukee, amid an interesting series of imitative and other mounds, there occur five designs, wrought—to use a term of European art,—in intaglio. Instead of the representations of animals being executed in relief, the process has been reversed, and after forming them by this means, the outline has been completed by piling the excavated earth round the edge. A few other examples have been noted; but such a process is more liable to effacement in the progress of time, unless renewed like the famous "White Horse" of Berkshire, by a periodical "scouring." The chalk hills of southern England present peculiar facilities for effective colossal intaglio work. Another White Horse, ascribed to Saxon victors of the Danes, accompanies a group of British earthworks on Braddon Hill, Wiltshire; and the colossal human figure, armed with a club, at Cerne, in Dorsetshire, preserves a still closer counterpart to those scattered over the prairie lands beyond the western shores of Lake Michigan.

But for our present purpose the comparison of those ancient earthworks with others clearly traceable to the modern Indian tribes, is more important than any analogies between the antiquities of the two hemispheres. One fact of obvious significance is the great scale on which the American prehistoric races wrought, and the consequent evidences of numbers and combined labour perseveringly applied to the accomplishment of their aim. It is difficult to convey any definite conception of this by mere description, even though accompanied with minute measurements. A single cruciform mound measures four hundred and twenty feet between the extreme points of its limbs. Lizard and other animal-mounds, ranging from eighty to a hundred and fifty feet in length occur in extensive groups; and by their systematic arrangement impress the mind with the idea of protracted toil carried on under the control of some supreme rule, or stimulated by motives of paramount influence. The Indian tribes that have come under observation are as diverse in habits, arts, and religious rites as in language; but none of them have manifested any capacity either for the requisite skill or combination involved in the construction of monuments which more nearly resemble the great embankments and

viaducts of modern railway engineering. The extent of such works indicates a settled condition of society, and agricultural industry, very different from that of the Iroquois Confederacy. In all this there may be nothing absolutely incompatible with the idea of the modern Indian being the degenerate descendant of such a people, yet it is unsupported by proof. No modern tribe preserves any trace of such ancestral constructive habits; and while the animal-mounds appear to be regarded with superstitious reverence by the Indians, and are never disturbed except for purposes of sepulture, they lay no claim to them as the work of their fathers. The only theory of their origin is, that they are the work of the great Manitou, and were made by him to reveal to his red children the plentiful supply of game that awaits them in the world of spirits. The idea is a consoling one to tribes whose hunting-grounds have been invaded and laid desolate; and it is fully as philosophical as the theory gravely propounded to the American Scientific Association, that the cruciform and curvilinear earthworks intermingled with the animal-mounds, include characters of the Phœnician alphabet, and are half-obliterated inscriptions commemorative of explorations by the great voyagers of antiquity!

What then are the inferences thus far deducible as to the races of Northern America in ante-Columbian centuries? This at least is apparent, that its Indian tribes represent but a degraded phase of American nationalities. Before the Indian hunter wandered there, or the great river-valleys were overshadowed with their ancient forests, nations dwelt in those valleys, practising arts and rites which involved many germs of civilisation. Their military skill, their agricultural industry, and even their ideas of the mysterious relations of man to some supreme spiritual power, are still suggested to us by evidence, which, though inadequate for any detailed chronicle, discloses many glimpses of an unwritten history, full of interest even in this tantalizing form. But mutilated as those chroniclings are, their evidence is not exhausted. We have still to consider the characteristics of the ancient race as deduced from the mound crania; and their geographical and ethnical relations as indicated by the sources of foreign materials, and the models and style of their works of art. But before doing so, it will help to a more comprehensive application of the whole accessible evidence, to review the history of those ancient American races among whom civilisation attained a higher development, and of whom we have historical evidence, as well as the chronicles which archæology supplies.

CHAPTER XIV.

NATIVE AMERICAN CIVILISATION.

THE TOLTECS—THE AZTECS—AMERICAN ARCHITECTURE—EGYPTIAN ANALOGIES—AZTALAN—THE VALLEY OF MEXICO—MONTEZUMA'S CAPITAL—ITS VANISHED SPLENDOUR—MEXICAN CALENDAR STONE—MEXICAN DEITIES—TOLTEC CIVILISATION—THE TOLTEC CAPITAL—TEZCUCAN PALACES—THEIR MODERN VESTIGES—QUETZALCOATL—THE PYRAMID OF CHOLULA—THE SACRED CITY—THE MOQUI INDIANS—THE HOLY CITY OF PERU—WORSHIP OF THE SUN—ASTRONOMICAL KNOWLEDGE—AGRICULTURE—WOVEN TEXTURES—SCIENCE AND ART—NATIVE INSTITUTIONS—CONTRAST OF MEXICO AND PERU—ORIGIN OF THE MEXICANS—MINGLING OF RACES.

THE Toltecs play a part in the initial pages of the New World's story akin to the fabled Cyclops of antiquity. They belong to that vague era which lies beyond all definite records, and furnish a name for the historian and the ethnologist alike to conjure with: like the Druids or the Picts of the old British antiquary, or the Phœnicians of his American disciple. Yet it is not without its value thus to discover, among the nations of the New World, even a fabulous history, with its possible fragments of truth embodied in the myth. Mr. Gallatin has compiled a laborious digest of the successive migrations and dynasties of Mexico, as chronicled from elder sources, by Ixtlilxochitl, Sahagun, Veytia, Clavigero, the Mendoza Collection, the Codex Tellurianus, and Acosta.[1] The oldest dates bring the Toltec wanderers to Huehuetlapallan, A.D. 387, and close their dynasty in the middle of the tenth century; when they are superseded by Chichimecas and Tezcucans, whose joint sovereignty, by the unanimous concurrence of authorities, endured till the sixteenth century. But, meanwhile, the same authorities chronicle the foundation of Mexico or Tenochtitlan, variously in the thirteenth or fourteenth century, by Aztec conquerors, and profess to supply the dynastic chronology of Aztec power. The earliest date is not too remote for the commencement

[1] *American Ethnological Society's Transactions*, vol. i. p. 162.

of a civilisation that has left such evidences of its later maturity; but unfortunately the various authorities differ not by years only, but by centuries. Ixtlilxochitl carries back the founding of Mexico upwards of a century farther than any other authority; and in the succeeding date, which professes to fix the election of its king, Acamapichtli, the discrepancies between him and other authorities vary from two to considerably more than two and a half centuries, and leave on the mind of the critical student impressions as unsubstantial as those pertaining to the regal dynasties of Alban and Sabine Rome. Spanish chroniclers and modern historians have striven to piece into coherent details the successive migrations into the Vale of Anahuac, and the desertion of the mythic Aztalan for the final seat of Aztec empire on the lake of Tezcuco; but their shadowy history marshals before us only shapes vague and immaterial as the poet's dream, "from many an age withheld," of kingly splendours of the engulfed Atlantis.[1]

There is something singularly suggestive of doubt relative to much else that is greatly more modern, to find the gifted historian of the Conquest of Mexico tracing down the migrations and conquests of the Toltecs from the seventh till the twelfth century, when the Acolhuans or Tezcucans, the Aztecs, and others, superseded them in the Great Valley. We turn to the foot-notes, so abundant in the carefully elaborated narrative of Prescott, and we find his chief or sole authority is the christianized half-breed of Tezcuco, De Alva, or Ixtlilxochitl, who held the office of Indian interpreter of the Viceroyalty of New Spain in the beginning of the seventeenth century. Compared with such an authority, Bede should be indisputable as to the details of Hengist and Horsa's migrations, and Geoffrey of Monmouth may be quoted implicitly for the history of Arthur's reign.

But the Aztecs or ancient Mexicans, at any rate, are no mythic or fabulous race. The conquest of their land belongs to the glories of Charles V., and is contemporary with what Europe reckons as part of its modern history. The letters of its conqueror are still extant; the gossiping yet graphic marvels of his campaigns, ascribed to the pen of Bernal Diaz, a soldier of the Conquest, have been diligently ransacked for collation and supplementary detail; and the ecclesiastical chroniclers of Mexican conquest and colonization, have all contributed to the materials out of which Prescott has woven his fascinating picture of Hernando Cortes and his great life-work. It is a marvellous historical panorama, glittering with a

[1] Rogers' *Voyage of Columbus.*

splendour as of the mosques and palaces of Old Granada. But a growing inclination is felt to test the Spanish chroniclers by surviving relics of that past which they have clothed for us in more than oriental magnificence; and, for this purpose, to relume that curious phase of native civilisation, which was abruptly quenched, like an extinguished torch, under the heel of the conqueror. Yucatan and Central America still reveal indisputable memorials of an era of native architectural skill, to which our attention must be directed with earnest care. But, meanwhile, it is important to note that an assumed correspondence between much of the architecture of Central America and that which is affirmed to have existed in Mexico at the time of the Conquest constitutes the basis of many fallacious arguments on the nature and extent of Aztec civilisation in the era of the second Montezuma. Again, the conflicting elements apparent between the barbarous rites and cannibalism ascribed by their conquerors to the Aztecs, and the evidences of their matured arts and high civilisation, have been the plentiful source of theories as to Toltecan and other earlier derivations, for all that pertained to such manifestations of intellect and inventive genius. But it is specially desirable to determine the actual character of Mexican architecture. The remains of the extinct Mound-Builders are full of wonder for us, but the magnificence of Montezuma's capital throws their simple earthworks into the shade; and, while reading with implicit faith the narrative of its conqueror, we feel that the age of America's infancy and childhood lies buried in those older mounds. Before, however, this conclusion can be accepted, it is indispensable that we test, by existing evidence, the descriptions of Mexican art and architecture handed down to us by the chroniclers of the sixteenth and seventeenth centuries.

A peculiar style is recognised as pertaining to the native architecture of America, which it has been the favourite fancy of American antiquaries to trace to an Egyptian or Phœnician source. Alike in general character and mode of construction, in the style of sculpture, and the hieroglyphic decorations which enrich their walls: the ruined palaces and temples of Mexico, as well as of Yucatan and Central America, have been supposed to reproduce striking characteristics of the Nile valley. But the experienced eye of Stephens saw only elements of contrast instead of comparison; and while Prescott sums up his history of Mexican conquest with this conclusion, "that the coincidences are sufficiently strong to authorize a belief that the civilisation of Anahuac was, in some

degree, influenced by that of eastern Asia," he adds, that the discrepancies are such as to carry back the communication to a period so remote as to leave its civilisation, in all its essential features, peculiar and indigenous. Searching, on an earlier page, for any specific proofs to justify such analogies, the historian remarks: "The points of resemblance will probably be found neither numerous nor decisive. There is, indeed, some analogy both to the Egyptian and Asiatic style of architecture, in the pyramidal, terrace-formed bases on which the buildings repose, resembling also the Toltec and Mexican teocalli. A similar care also is observed in the people of both hemispheres to adjust the position of their buildings by the cardinal points. The walls in both are covered with figures and hieroglyphics, which, on the American as on the Egyptian, may be designed perhaps to record the laws and historical annals of the nation. These figures, as well as the buildings themselves, are found to have been stained with various dyes, principally vermilion; a favourite colour with the Egyptians also, who painted their colossal statues and temples of granite. Notwithstanding these points of similarity, the Palenque architecture has little to remind us of the Egyptian or of the Oriental."[1] And we must add, that even those analogies are very partially true, and can only be carried so far by ascribing to Mexican civilisation what probably had a totally distinct origin. For if the gifted historian of the Conquest of Mexico had to employ other eyes to give to the world the attractive and glowing pictures wrought by his fancy and judgment from manuscript treasures, gathered alike from the old colonial empire of Spain, and from public archives of the Peninsula: we may feel the less hesitation in testing, by a severe standard of criticism, the proofs on which so many of our ideas are founded relative to the native-born civilisation of Mexico, and of America at large.

It is difficult to determine what we are to believe relative either to the former or the present characteristics of some of the most famous monuments of Mexican art. The ruined city of Aztalan, on the western prairies: after filling the imagination with glowing fancies of a desert Baalbek or Palmyra of the New World, from whence the Aztecs had transplanted the arts of an obliterated civilisation to the Mexican plateau; shrunk before the critical gaze of a truthful surveyor into a mere group of mounds and earth-works: curious, indeed, and replete with interest; but presenting no other analogies than those which class them with the works of

[1] Prescott's *Conquest of Mexico*, Append. part I.

the American Mound-Builders. Yet it is strange how enduring such cloud-built structures will often prove. The pride of local prejudice becomes enlisted on behalf of the current tale of exaggeration; the stereotyped phraseology which speaks of earthen mounds and clay ramparts as pyramids, bastions, and buttressed walls, perpetuates the extravagant hyperboles of their first discoverers; and, but for some timely and well-authenticated survey, it is left to later generations to sift painfully the vague and contradictory fables of a past that never had a present. The literal Aztalan, on the banks of the Rock River of Wisconsin, but poorly corresponds to the received ideas of that northern Aztalan, to which Mexican traditions and hieroglyphical maps alike pointed as the abode of a warlike ancestry, glorious as the sons of the Titans, or the offspring of the Teutonic Odin. It may be, however, that a like critical survey will reveal to us traits in the later Aztecs of Anahuac, rendering such an ancestral birth-land less inconsistent with their actual condition when brought into fatal contact with the civilisation of Europe. Such at least seems to be the tendency of modern disclosures; if, indeed, they do not point to the possibility that much even of the latest phase of Mexican civilisation may present closer analogies to the actual ruined Aztalan of the Wisconsin prairies, than to the fancied mother-city of the Aztecs.

Midway across the continent of North America, where it narrows towards a point between the Gulf of Mexico and the Pacific, the civilisation of the New World appears to have converged at the close of the fifteenth century. Here the traveller from the Atlantic coast, after passing through gorgeous tropical flowers and aromatic shrubs of the deadly *tierra caliente*, emerges at length into a purer atmosphere. The vanilla, the indigo, and flowering cacao-groves are gradually left behind. The sugar-cane and the banana next disappear; and he looks down through the gorges of the elevated *tierra templada* on the vegetation of the tropics, carpeting, and scenting with its luscious but deadly odours, the burning region which stretches along the Mexican Gulf. Higher still are regions where the wheat and other grains of Europe's temperate zone replace the tall native maize; until at length he enters the *tierra fria:* climbing a succession of terraces representing every zone of temperature, till he rests on the summit of the Cordillera. Beyond this the volcanic peaks of the Andes tower into the regions of perpetual snow; while the traveller crosses the once thickly-wooded table-land into the celebrated valley of Mexico: an oval basin

about sixty-seven leagues in circumference, and elevated beyond the deadly malaria and enervating heat of the coast into a temperate and fertile climate, nearly seven thousand five hundred feet above the equidistant Atlantic and Pacific Oceans. Here, encompassed by the salt marshes of the Tezcucan Lake, stood the ancient Tenochtitlan or Mexico, "The Venice of the Aztecs."

In the month of October 1519, Don Diego de Ordaz effected the ascent of the volcanic Popocatepetl, along with which stands Iztaccihuatl: like two giant sentinels guarding the portal of the Mexican valley. Reaching the summit of the burning mountain, De Ordaz stood at an elevation upwards of two thousand feet higher than the lofty monarch of the Alps. Marked as Popocatepetl then was by the characteristics of an active volcano, it was regarded with superstitious terror by the natives as haunted by the ghosts of death-deposed tyrants, whose agonies reproduced there the convulsions of the classic Titans. From this height, De Ordaz was the first European who beheld the valley of Mexico with its curious chain of lakes; and caught a glimpse of the far-famed capital of Montezuma, with its white towers and pyramidal teocallis reflecting back the sun from their stuccoed walls. The scene seemed to realize such a dream of romance as Bernal Diaz reports of Cempoal: "The buildings," he says, "having been lately whitewashed and plastered, one of our horsemen was so struck with the splendour of their appearance in the sun, that he came back in full speed to Cortes to tell him that the walls of the houses were of silver." The men of that generation which witnessed the discoveries of mighty empires, and an El Dorado beyond the known limits of the world, had their imaginations expanded to the reception of any conceivable wonders. Sir Thomas More constructed his *Utopia* out of such materials; and Othello styles his wonderful relations "of antres vast and deserts idle," a "traveller's history."

The fine poetical imagination of Columbus was one of the sources of his power, whereby he anticipated with an undoubting faith the realization of his grand life-work. But from the position in which Cortes was placed, it was his interest to give currency to the highly-coloured visions of his first pioneers, rather than to transmit to Europe the colder narrative of more matured experience. Approaching the Mexican capital, he exclaims in his first burst of enthusiasm: "We could compare it to nothing but the enchanted scenes we had read of in *Amadis de Gaul*, from the great towers and temples, and other edifices of lime and stone which

seemed to rise up out of the water." To achieve the recognised mastery of this scene of enchantment, he had not only to conquer its Mexican lords, but to defeat his Spanish foes, and to win to his side that Emperor who, while shaping Europe's history in one of its mightiest revolutions, could control the destinies of the New World. When reading the accounts he transmitted to Spain of the gorgeous treasures of Montezuma's palaces, we have to bear in remembrance that the treasures themselves perished in the retreat of the *noche triste*, as the city itself vanished in the final siege and capture. The very dreams of an excited imagination could become realities of the past to the narrators themselves, when every test of their truth had been swept away.

On the 9th of November 1519, Cortes made his first entry into the capital of Montezuma, and from thence he wrote to the Emperor Charles v., giving an account of the Indian metropolis, with its palaces and stately mansions, far surpassing in grandeur and beauty the ancient Moorish capital of Cordova. Conduits of solid masonry supplied the city with water, and furnished means of maintaining hanging-gardens luxurious as those of ancient Babylon. "There is one place," says Cortes, "somewhat inferior to the rest, attached to which is a beautiful garden with balconies extending over it, supported by marble columns, and having a floor formed of jasper elegantly inlaid;" and he adds, "Within the city, the palaces of the cacique Montezuma are so wonderful that it is hardly possible to describe their beauty and extent. I can only say that in Spain there is nothing equal to them." The population of ancient Mexico, "the greatest and noblest city of the whole New World," as Cortes styles it, amounted, according to the lowest computation of its conquerors, to three hundred thousand; and its streets and canals were illuminated at night by the blaze from the sacred altars of numberless teocallis that reared their pyramidal summits in the streets and squares of what Prescott fitly calls "this city of enchantment." Vast causeways, defended by drawbridges, and wide enough for ten or twelve horsemen to ride abreast, attracted the admiring wonder of the Spaniards, by the mechanical skill and geometrical precision with which they were constructed. "The great street facing the southern causeway was wide, and extended some miles in nearly a straight line through the centre of the city. A spectator standing at one end of it, as his eye ranged along the deep vista of temples, terraces, and gardens, might clearly discern the other, with the blue mountains in the distance, which, in the

transparent atmosphere of the table-land, seemed almost in contact with the buildings."[1] Near the centre of the city rose a huge pyramidal pile, dedicated to the war-god of the Aztecs, the tutelary deity of the city: second in size only to the great pyramid-temple of Cholula, and occupying the area on which now stands the Cathedral of modern Mexico. Beyond the Lake of Tezcuco stood the rival capital of that name, resplendent with a corresponding grandeur and magnificence; and the whole Mexican valley burst on the eyes of the conquerors as a beautiful vision, glittering with towns and villages, with rich gardens, and broad lakes crowded with the canoes of a thriving and busy populace.

Less than three centuries and a half have intervened since Cortes entered the gorgeous capital of Montezuma; and what remains now of its ancient splendour, of the wonders of its palaces, the massive grandeur of its temples, or the cyclopean solidity of its conduits and causeways? Literally, not a vestige. The city of Constantine has preserved, in spite of all the destructive vicissitudes of siege and overthrow, enduring memorials of the grandeur that pertained to the Byzantine capital more than a thousand years ago. Of Rome, it is literally true that:—

> "The Goth, the Christian, time, war, flood, and fire,
> Have dealt upon the seven-hill'd city's pride;
> She saw her glories, star by star expire,
> And up the steep barbarian monarchs ride,
> When the car climb'd the Capitol; far and wide
> Temple and tower went down, nor left a site:
> Chaos of ruins!"

Yet Rome has her memorials not only of three or four centuries, but of generations before the Christian era; and even Jerusalem appears to have some stones of her ancient walls still left upon one another. In spite, therefore, of the narrative of desolating erasure which describes to us the final siege and capture of Mexico, we must assume its edifices and causeways to have been for the most part greatly more slight and fragile than the description of its conquerors implies, or some evidences of such extensive and solid masonry must have survived to our time.

But one trustworthy memorial of native civilisation has been preserved in the famous Calendar Stone: a huge circular block of dark porphyry, disinterred in 1790 in the great square of Mexico, which discloses evidence of progress in astronomical science alto-

[1] Prescott's *Conquest of Mexico*, B. III. ch. ix.

gether wonderful in a people among whom civilisation was in other respects so partially developed. The Mexicans had a solar year of 365 days divided into eighteen months of twenty days each, with the five complementary days added to the last. The discrepancy between the actual time of the sun's annual path through the heavens and their imperfect year, was regulated by the intercalation of thirteen days at the end of every fifty-second year. According to Gama, who differs from Humboldt on this point, the civil day was divided into sixteen parts; and he conceives the Calendar to have been constructed as a vertical sun-dial. Mexican drawings

FIG. 18.—Mask, Mexican Calendar Stone.

also indicate that the Aztecs were acquainted with the cause of eclipses. But beyond this, our means of ascertaining the extent of their astronomical knowledge fail; while we have proofs that their inquiries were zealously directed to the more favoured speculations of the astrologer, which have supplanted true science in all primitive stages of society. Mr. Stephens has drawn attention to certain points of correspondence between the central device on the Calendar Stone, and a hideous mask, with widely expanded eyes and tongue hanging out, prominent in the curious scene of sacrifice or offerings

sculptured on the Casa de Piedra at Palenque. But the correspondence amounts to little more than this, that each is a gigantic mask with protruding tongue. That of the Calendar Stone is engraved here from a cast brought home by Mr. Bullock, and now in the Collection of the Society of Antiquaries of Scotland. The statues dug up along with the Calendar Stone from among the remains of the great teocalli of Mexico, were buried in the court of the University, to place them beyond reach of the idolatrous rites which the Indians were inclined to pay to them; but at the solicitation of Mr. Bullock they were again disinterred, to admit of his obtaining casts; and he furnishes this interesting account of the sensation excited by the restoration to light of the largest and most celebrated of the Mexican deities:—"During the time it was exposed, the court of the University was crowded with people, most of whom expressed the most decided anger and contempt. Not so, however, all the Indians. I attentively marked their countenances. Not a smile escaped them, or even a word. All was silence and attention. In reply to a joke of one of the students, an old Indian remarked, 'It is very true we have three very good Spanish gods, but we might still have been allowed to keep a few of those of our ancestors!' And I was informed that chaplets of flowers had been placed on the figure by natives who had stolen thither unseen in the evening."[1]

The figure which thus reawakened patriotic sympathies in the degenerate descendants of the subjects of Montezuma, is a rude disproportioned idol, strikingly contrasting with the elaborate hieroglyphical devices and well-proportioned figures and decorations which accompany the grotesque mask in the Casa de Piedra of Palenque. In the latter, the principal human figures present the remarkable profile of the ancient Central American race, with the prominent nose, the retreating forehead and chin, and the protruding under-lip, as shown on a vase dug up among the ruins of Ticul (Fig. 38), so essentially different from the features either of the Mexicans or northern Indians. The subject race on whom they tread are characterized by a diverse profile, with overhanging brows, a Roman nose, and a well-defined chin; while their costume is equally indicative of a different origin.

But the sculpture of the Mexican Calendar Stone, embodies evidence of an amount of knowledge and skill not less interesting for us than the mysterious hieroglyphics of the Palenque tablets; and was believed by Humboldt to indicate unmistakable relations

[1] Bullock's *Six Months in Mexico*, p. 111.

to the ancient science of south-eastern Asia. Mr. Stephens has printed a curious exposition of the chronology of Yucatan, derived from native sources by Don Juan Pio Perez. From the correspondence of their mode of computing time with that adopted by the Mexicans, he assumes that it probably originated with them; but at the same time he remarks that the inhabitants of Mayapan, as the Peninsula was called at the period of Spanish invasion, divided time by calculating it almost in the same manner as their ancestors the Toltecs, differing only in the particular arrangement of their great cycles. Their year commenced on the 16th of July, an error of only forty-eight hours in advance of the precise day in which the sun returns there to the zenith, on his way to the south, and sufficiently near for astronomers who had to make their observations with the naked eye. Their calendar thus presents evidence of native and local origin. According to Humboldt, the Mexican year began in the corresponding winter half of the year, ranging from the 9th to the 28th of January, but Clavigero places its commencement from the 14th to the 26th of February.

If my ideas as to evidence of a marked inferiority in the terra-cottas and sculptures of the Mexicans, and the very questionable nature of the proofs of their architectural achievements are correct, they tend to confirm the inference, that not to the Aztecs, but to their peaceful and more civilized Toltec predecessors, must be ascribed that remarkable astronomical knowledge in the arrangement of their calendar, which exhibits a precision in the adjustment of civil to solar time, such as only a few of the most civilized nations of the Old World had attained to at that date. So far, therefore, as an indigenous American civilisation is concerned, it matters little whether it be ascribed to Toltec or Aztec origin. Of its existence no doubt can be entertained; and there is little more room for questioning, that among races who had carried civilisation so far, there existed the capacity for its full development, independently of all borrowed aid from the science or the philosophy which Greece called into being, and modern Europe had matured. The fierce Dane and Norman seemed to offer equally little promise of intellectual progress in their first encroachments on the insular Saxon. But out of such elements has sprung the modern race, which outstripped the Spaniard in making of the land of Columbus a New World; and, left to its own natural progress, the valley of Anahuac, with its mingling races, might have proved the fountain from whence intellectual life should flow to the nations of the whole continent.

But modern Mexico has displaced the ancient capital of Montezuma; cathedral, convents, and churches, have usurped the sites of Aztec teocallis; its canals have disappeared, and its famous causeways are no longer laved by the waters of the Tezcucan Lake. It is even denied by those who have personally surveyed the site, that the waters of the lake can ever have overflowed the marshes around the modern capital, or stood at a much nearer point to it than they do at present.[1] Fresh doubts seem to accumulate around its mythic story. The ruined masonry of its vanished palaces and temples may be assumed to have been all swallowed up in the edifices, which combine to make of the modern capital so striking an object, amid the strange scenery of its elevated tropical valley. But Mexico was not the only city, nor even the only great capital, of the valley.

In attempting to trace back the history of the remarkable population found in occupation of the Mexican territory when first invaded by the Spaniards, we learn, by means of various sources of information already referred to, but chiefly on the dubious authority of Ixtlilxochitl's professed interpretations of picture-writings, no longer in existence; and of traditions of old men, concerning events reaching back from seven or eight, even to twelve centuries before their own time: that the Toltecs, advancing from some unknown region of the north, entered the territory of Anahuac, "probably before the close of the seventh century." They were, according to their historian, already skilled in agriculture and the mechanical arts, familiar with metallurgy, and endowed with all the knowledge and experience out of which grew the civilisation of Anahuac in later ages. In the time of the Conquest, extensive ruins are said to have still indicated the site of their ancient capital of Tula, to the north of the Mexican valley. The tradition of such ruined cities adds confirmation to the inferences derived from those more recently explored in regions to the south; and still the name of Toltec in New Spain is synonymous with *architect:* the mythic designation of a shadowy race, such as glances fitfully across the first chapters of legendary history among the most ancient nations of Europe. But subsequent to those Pelasgi of the New World, there followed from unknown regions of the far north the Chichimecas, the Tepanecs, the Acolhuans or Tezcucans, the Aztecs or Mexicans, and other inferior tribes; so that, as we approach a more definite period of history, we learn of a league between the States of Mexico and Tezcuco, and the kingdom of Tlacopan, under which

[1] Topographical View of the Valley, Wilson's *New History of Mexico*, p. 452.

the Aztec capital grew into the marvellous city of temples and palaces described by Cortes and his followers. But Ixtlilxochitl, or Don Fernando de Alva, claimed descent on his mother's side from the Imperial race of Tezcuco; and he has not failed to preserve, or to create the memorials of the glory of that imperial city of the laguna. It contained upwards of four hundred stately edifices for the nobles. The magnificent palace of the Tezcucan emperor "extended, from east to west, twelve hundred and thirty-four yards, and from north to south, nine hundred and seventy-eight. It was encompassed by a wall of unburnt bricks and cement, six feet wide and nine high, for one half of the circumference, and fifteen feet high for the other half. Within this enclosure were two courts. The outer one was used as the great market-place of the city, and continued to be so until long after the Conquest. The interior court was surrounded by the council-chambers and halls of justice. There were also accommodations there for foreign ambassadors; and a spacious saloon, with apartments opening into it, for men of science and poets, who pursued their studies in this retreat, or met together to hold converse under its marble porticos."[1] Such is the style in which the historian of the Conquest describes the glories of ancient Tezcuco. A lordly pile, provided for the fitting accommodation of the sovereigns of Mexico and Tlacopan, contained three hundred apartments, including some fifty yards square. Solid materials of stone and marble were liberally employed both on this and on the apartments of the royal harem, the walls of which were incrusted with alabasters and richly tinted stucco, or hung with gorgeous tapestries of variegated feather-work. Some two leagues distant, at Tezcotzinco, was the favourite residence of the sovereign; on a hill, "laid out in terraces, or hanging gardens, having a flight of five hundred and twenty steps, many of them hewn in the natural porphyry. In the garden on the summit was a reservoir of water, fed by an aqueduct carried over hill and valley for several miles on huge buttresses of masonry. A large rock stood in the midst of this basin, sculptured with hieroglyphics representing the years of Nezahualcoyotl's reign, and his principal achievements in each. On a lower level were three other reservoirs, in each of which stood a marble statue of a woman, emblematic of the three estates of the empire. Another tank contained a winged lion,"—but here the historian grows incredulous, and appends a (?) before proceeding in accordance with his historical authorities to add—"cut

[1] Prescott's *Conquest of Mexico*, B. I. Chap. vi.

out of the solid rock, bearing in his mouth the portrait of the emperor." The authority for all this lived and wrote in the beginning of the seventeenth century. His narrative appears to receive some confirmation from architectural remains still visible on the hill of Tezcotzinco, and referred to by Latrobe and Bullock as relics of an era greatly more remote than that of Aztec civilisation. But where are now the magnificent remains of the imperial city of Tezcuco? The spirit of Spanish romance and Moorish fable seems to beset modern as well as ancient narrators, as if a spell of enchantment still guarded the legends of Aztec and Tezcucan empire. Bullock, in his *Six Months in Mexico*, describes the remains of the royal fountain of Tezcotzinco, witnessed by him, as a "beautiful basin, twelve feet long by eight wide, having a well five feet by four deep in the centre;" but Latrobe, in his *Rambles in Mexico*, reduces the dimensions of the royal bath to "perhaps two feet and a half in diameter, not large enough for any monarch bigger than Oberon to take a duck in." This agrees with other authorities, and with accounts received by Prescott from persons resident on the spot. It is suggestive, therefore, of grave doubts relative to the first-mentioned traveller's observation of ancient terraces still entire, and numerous remains of the sculptured blocks of the Tezcucan temples and palaces visible in its modern buildings.

Of Tezcuco, a recent traveller tells us that its sole memorial is an insignificant mud village. "There are no remains of ancient aqueduct or hanging garden, nor of its magnificent palaces and surrounding villas, nor of its halls of justice. Even the walls of its vast enclosures have left no trace."[1] Friar Thomas Gage, writing within a century of the Conquest, with no incredulity as to the former greatness and high civilisation of the Mexican Valley, speaks of Tezcuco as but a poor village of some three hundred Indians, and one hundred Spaniards, whose subsistence mainly depended on the herbs they took daily in their canoes to the Mexican market; while he remarks of another famed or fabled scene of ancient native grandeur: "We passed the Mexicalzingo, which formerly was a great town, but has now not above one hundred inhabitants."[2] But the extravagant character of the whole romance of the Spanish conquistadors seems to be summed up in the criticism of the former writer, based on topographical evidence. He

[1] Wilson's *New History of the Conquest of Mexico*, p. 57.
[2] Gage's *New Survey of the Indians*, p. 90.

shows, that owing to the relative levels, Mexico never can have been surrounded by the lake, which now lies distant from its marshy site; while the multitudes, crowding the great cities of the Valley at the era of the Conquest, vanish like the porphyry of their temples, and the marbles of their palaces, when we read of of "three imperial capitals, and three crowned heads of the empire, within a space of sixteen miles, in a mountain valley twenty miles in extent, and more than half that space filled with salt marsh."[1]

Of the great Mexican pyramid or teocalli of Huitzilopotchli, no vestige now remains, unless such as is reputed to lie buried under the foundations of the cathedral which occupies its site. But time and fate have dealt more tenderly with the scarcely less famous pyramid of Cholula. The ancient city of that name was said to include, within and without its walls, when first seen by Cortes, about forty thousand houses, or according to ordinary rules of computation, two hundred thousand inhabitants. But whatever its ancient population may have been, the fruits of Spanish conquest have advanced it to the rank of capital of the republic of Cholula; but have left only sixteen thousand as the number of its modern occupants. Still, Cholula was unquestionably one of the most famous of the cities of the New World: a sacred Mecca for the pilgrims of Anahuac.

Quetzalcoatl, the milder god of the Aztec pantheon, whose original worship was performed by offerings of fruits and flowers in their season, was venerated as the divine teacher of the arts of peace. His reign on earth was the golden age of Anahuac, when its people learned from him agriculture, metallurgy, and the art of government. But their benefactor, according to the tradition handed down to the Aztecs by an elder people whom they had superseded, incurred the wrath of another of the gods; and as he passed on his way to abandon the land to the rule of the terrible Huitzilopotchli, he paused at the city of Cholula; and while he tarried there, the great teocalli was reared and dedicated to his worship. But the benevolent deity could not remain within reach of the avenger. After spending twenty years among them, teaching the people the arts of civilisation, he passed onward till he reached the shores of the great ocean; and there embarking in a vessel, made of serpents' skins, his followers watched his retreating bark on its way to the sacred isle of Tlapallan. But the tradition lived on among the Mexicans that the bark of the good deity would

[1] Wilson's *New History of Mexico*, p. 48.

revisit their shores; and this fondly cherished belief materially contributed to the success of the Spaniards, when their huge-winged ships bore the beings of another world to the mainland of the Mexican Gulf. The legend bears all the marks of anciently derived hero-worship, in which love for a lost benefactor framed for itself a deified embodiment of his virtues. This, however, is important to note, that the Aztec traditions told that the pyramid of Cholula belonged to an older race and era than their own. It was there when they entered the plateau, and the arts of the divine metallurgist were taught, not to them but to the Toltecs, whom they superseded. Nevertheless, the deity shared in their worship; his image still occupied the shrine on the summit of the pyramid of Cholula, resplendent with gold and jewels, when the Spaniards first visited the holy city; and the undying flame flung its bright radiance far into the night, to keep alive the memory of the good deity who was one day to return and restore the golden age.

The present appearance of the great teocalli very partially justifies the reference made by Prescott to it as "that tremendous mound on which the traveller still gazes with admiration as the most colossal fabric in New Spain, rivalling in dimensions, and somewhat resembling in form, the pyramidal structures of ancient Egypt." If it ever was a terraced pyramid, time and the elements have wholly effaced the traces of its original outline. On the authority of Humboldt, it is described as a pyramidal mound of stone and earth, deeply incrusted with alternate strata of brick and clay, which "had the form of the Mexican teocallis, that of a truncated pyramid facing with its four sides the cardinal points, and divided by the same number of terraces." But the *adobe* of the Mexican, which is frequently styled brick, is nothing more than a mass of unbaked clay, or even mud. If such, therefore, is the supposed brick which alternated with the other materials of the mound, we can the more readily reconcile the seeming contradictions of observers. One of the latest thus describes the impression produced on his mind: "Right before me, as I rode along, was a mass of trees, of evergreen foliage, presenting indistinctly the outline of a pyramid, which ran up to the height of about two hundred feet, and was crowned by an old stone church, and surmounted by a tall steeple. It was the most attractive object in the plain; it had such a look of uncultivated nature in the midst of grain fields. It would have lost half its attractiveness had it been the stiff and clumsy thing which the picture represents it to be. I had admired

it in pictures from my childhood, for what it was not; but I now admired it for what it really was: the finest Indian mound on this continent."[1] Such is the conclusion arrived at by Mr. Robert Anderson Wilson, as the result of personal observation; and the deductions ultimately suggested to him from further investigation, have since been embodied in his *New History of the Conquest of Mexico*. "Time," he says, "has been busy on this mass of earth since Humboldt was there. The cypresses he mentions are gone, and a large part of the churchyard wall has also fallen." Accordingly the mound, which is engraved in the *Vues de Cordillères* as a series of four successive terraces, rising to an elevation of less than a sixth of the length of its base line, is figured by Mr. R. A. Wilson from sketches taken on the spot, as a conical mound, of greater elevation than breadth of base, overgrown with shrubs, and without any trace of terraces.[2] The church on the summit, which is the only feature common to the two views, alone retains any appearance of art, and no doubt has somewhat to do with its absence elsewhere; for if the clergy found the teocalli cased like the pyramidal terraces of Central America, with cut stone steps and facings, there can be little doubt they would go no further for a quarry for their intended church.

But after making every allowance for the influence of time's effacing and defacing touch, it is difficult to believe that the sacred city of Cholula ever realized the magnificent picturings of its Spanish conquerors, with its hundreds of mosques and towers, its lofty white temples, and its picturesque exterior, more beautiful than any city of Spain. Of the solidly built houses, numerous and large pyramidal temples, and all the substantial magnificence which is said to have struck the Spaniards with such wonder, not a vestige remains. The only traces of ruins are those of several deserted convents; and the town is described as a mere collection of *adobe* or mud huts. But the mutilated earthen pyramid exists; and on its truncated summit, where Cortes converted the half-burned temple of the teocalli to the purposes of a Christian church, now stands a more modern ecclesiastical structure, dedicated to Our Lady *de los Remedios*, whose shrine is tended by an Indian priest of the blood of the Cholulans.

To the north of the Mexican valley ancient ruins arrest the gaze of the traveller, onward even to California. On the Rio

[1] *Mexico and its Religion*, by R. A. Wilson.
[2] *New History of Mexico*, p. 381.

Colorado and its tributaries, numerous ruins of great extent have been surveyed by recent exploring parties, and are described as built with large stones, nicely wrought, and accurately squared. But nothing in their style of architecture suggests a common origin with the ruins of Mexico or Central America. They are large and plain structures, with massive walls, evidently built for defence, and with no traces of the ornamentation which abounds on the ruins of Yucatan. The Moqui Indians, the supposed remnant of the ancient builders, still construct their dwellings of stone with a great deal of art and skill. They are a gentle and intelligent race, small of stature, with fine black hair; and differ essentially from the Indians of the North-west. Their villages are included in one common stone structure, generally of a quadrangular form, with solid, unpierced walls externally, and accessible only by means of a ladder. These hive-like colonies are usually placed, for further defence, on the summit of the lofty plateaus, which in the region of New Mexico are detached by the broad cañons with which that remarkable region is intersected. By such means this ingenious people seek protection from the wild tribes with which they are surrounded. Thus permanently settled, while exposed to the assaults of marauding nomades, the Moquis cultivate the soil, raise corn, beans, cotton, and more recently some vegetables derived from intercourse with the Mexicans. They have also their flocks of sheep and goats; and weave their dyed wools into a great variety of substantial and handsome dresses. But only a small remnant now survives, occupying seven villages on the range of the Rio del Norte.[1]

Throughout New California ruined structures of stone, and sometimes of clay abound. The *Casas grandes*, as they are called, appear to have been defensive structures like the Moqui villages. Captain Johnston describes one, called the Casa de Montezuma, on the river Gila, which measured fifty feet by forty, and had been four storeys high. It is indeed worthy of note that while we find throughout the continent, from the Rocky Mountains to the Atlantic, scarcely a vestige of ante-Columbian stone architecture: traces of it increase upon us with every new exploration of the country that lies

[1] Dr. Latham speaks of the Moquis as a people that "no living writer seems to have seen."—*Varieties of Man*, p. 394. But the above information communicated to me by Professor Newberry, is the result of his own personal observations. He showed me also specimens of their woven dresses, manifesting considerable skill, and exhibiting great taste in the arrangement of their bright colours. They have recently been greatly reduced by small-pox.

between the Rocky Mountains and the Pacific, and merges towards the south into the seats of ancient native civilisation and matured architectural skill.

But the Southern Continent had also its seat of a remarkable native civilisation; which, like that of Mexico, derived some of its most striking characteristics from the physical aspects of the country in which it originated. The peculiar natural advantages of Peru resulted from the settlement of a people on the lofty plateaus of the Andes, but within the tropics, where at each successive elevation a different climate was secured. Such products as the mercantile navies of Northern Europe gather from many distant shores, were there brought within the compass of an industrious population: who fed their flocks on the cold crests of the sierra; cultivated their gardens and orchards on its higher plateaus; and gathered the luxuriant products of the tropics from the country that for them lay, for the most part, beneath the clouds, and spread away from the lowest slopes of the Andes to the neighbouring shores of the Pacific. The character of the people, and the nature of the civilisation of this remarkable country presented many striking contrasts to the customs and institutions of the Mexicans, and they have generally been assumed as of totally independent origin.

Peru has her historic traditions, no less than Mexico; and her native historian, Garcilasso de la Vega, a descendant, through his mother, from the royal line of the Incas: who plays for them the part which Fernando de Alva did for his Tezcucan ancestry. Seen through such a medium, the traditions of the Inca race expand into gorgeous pages of romance; and the institutions of European chivalry and medieval polity are grafted on the strange usages of an Indian nation, remarkable for its own well-matured commonwealth, and unique phases of native-born civilisation. Sabaism constituted the essential element of Peruvian religious faith, and gave form and colour to the national rites and traditions. Manco Capac and Mama Oello Huaco, their mythic instructors in the arts of agriculture, weaving, and spinning, were the Children of the Sun; their high religious festivals were determined by the solstices and equinoxes; and Quito, the holy city, which lay immediately under the Equator, had within it the pillar of the sun, where his vertical rays threw no shadow at noon, and they believed the god of light to seat himself in full effulgence in his temple. The sacred pillar stood in the centre of a circle described within the court of the great temple, traversed by a diameter drawn from east to west, by means of which

the period of the equinoxes was determined; and both then, and at the solstices, the pillar was hung with garlands, and offerings of fruit and flowers were made to the divine luminary and parent of mankind. The title of the sovereign Inca was the Child of the Sun; and the territory of the empire was divided into three portions, of which one, constituting the lands of the Sun, maintained the costly ceremonial of public worship, with the temples and their numerous priests and vestal virgins. The national traditions pointed to the Valley of Cuzco as the original seat of native civilisation. There their mythic Manco Capac founded the city of that name; on the high lands around it a number of columns were reared which served for taking azimuths, and by measuring their shadows the precise time of the solstices were determined.

Besides the divine honours paid to the sun, the Peruvians worshipped the host of heaven, and dedicated temples to the thunder and lightning, and to the rainbow, as the wrathful and benign messengers of the supreme solar deity. It might naturally be anticipated that a nation thus devoted to astronomical observations, and maintaining a sacred caste exclusively for watching solar and stellar phenomena, would have attained to great knowledge in that branch of science. Apparently, however, the facilities which their equatorial position afforded for determining the few indispensable periods in their calendar, removed the stimulus to further progress; and not only do we find them surpassed in this respect by the Muyscas, occupying a part of the same great southern plateau, who regulated their calendar on a system presenting considerable points of resemblance to that of the Aztecs; but they remained to the last in total ignorance of the true causes of eclipses, and regarded such phenomena with the same superstitious and apprehensive wonder as has affected the untutored savage mind in all ages. One historian, indeed, affirms that they recognised the actual length of the solar year, and regulated their chronology by a series of cycles of decades of years, centuries, and decades of centuries, the last of which constituted the grand cycle or great year of the sun.[1] This is only confuted by a reference to the silence of earlier authorities, and the absence of their evidence on the subject; and may serve to remind us how partial is all the knowledge we possess of the intellectual development of this singularly interesting people, among whom science was essentially esoteric, and systematically excluded from the vulgar.

[1] Montesino's *Mem. Antiquas MS.*, lib. ii. cap. 7; cited by Prescott.

Prescott seeks to account for the very imperfect nature of the astronomical science of Peru, by the fact, that the Peruvian priesthood were drawn exclusively from the body of the Incas: a privileged order of nobility who claimed divine origin, and were the less tempted to seek in superior learning the exclusive rights of an intellectual aristocracy. But other reasons help to explain this singular intellectual condition of a nation, which had in so many other directions made remarkable progress in civilisation. The very fact that astronomy constituted, as it were, the national religion, placed it beyond the reach of scientific speculation, among a people with whom blasphemy against the sun, and malediction of the Inca, were alike punished with death. The impediments to Galileo's astronomical discoveries were trifling compared with those which must have beset the presumptuous Inca priest who ventured to deny the diurnal revolution of the sun round the earth; or to explain, by the simple interposition of the moon between themselves and the sun, the mysterious and malign infirmities with which it constituted a part of the national creed to believe their supreme deity was afflicted during a solar eclipse. But another cause also tended to retard the progress of the Peruvians in the intelligent solution of astronomical phenomena. Among the ancient Egyptians we find the division of the year determined by the changes of the Nile; and their year regulated by applications of astronomical science, minutely interwoven with their sacred and civil institutions. But the phenomena of the seasons, which have fostered with every other civilized nation the accurate observation of the astronomical divisions of time, and the determination of the recurring festivals dependent on seed-time and harvest, were almost inoperative, where, among a people specially devoted to agriculture, each season and every temperature could be commanded by a mere change of elevation under the vertical sun of the Equator.

The Peruvians, however, must be tried by their own standards of excellence. Manco Capac, their mythic civilizer, was no war-god, like the Mexitli of the ferocious Aztecs. Agriculture was the special art introduced by him; and husbandry was pursued among them on principles which modern science has only recently fully developed in Europe. There alone, in all the New World, the plough was in use; and the Inca himself, on one of the great annual festivals, consecrated the labours of the husbandman by turning up the earth with a golden ploughshare. Artificial irrigation was carried out on a gigantic scale by means of aqueducts and

tunnels of great extent, the ruins of which still attest the engineering skill of their constructors. The virtues of *guano*, which are now so well appreciated by the agriculturists of Europe, were familiar to the Peruvian farmer; and as the country of the Incas included, at its various levels, nearly all varieties of climate and production, from the cocoa and palm that fringed the borders of the Pacific, to the pasture of their mountain flocks on the verge of the high regions of perpetual snow: a systematic succession of public fairs, regulated, like all else, by the supreme government, afforded abundant opportunities for the interchange of their diverse commodities.

Such a country, if any, could dispense with commerce, and attain to considerable advancement without a representative currency or circulating medium. Gold, which was so abundant, served only for barbaric pomp and decoration. Silver was accessible in such quantities, that Pizarro found in it a substitute for iron to shoe the horses of his cavalry. Copper and tin in like manner abounded in the mountains; and the Peruvians had learned to alloy the copper both with tin and silver, for greater utility in its application to the useful arts. Bartholomew Ruiz, it will be remembered, found on board the *balsa* first met by him off the Peruvian coast, a pair of balances for weighing the precious metals; and the repeated discovery of well-adjusted silver balances in tombs of the Incas, confirms the evidence that they made use of weights in determining the value of their commodities. The Peruvians were thus in possession of a mode of exchange, which, for their purposes, was superior to that of the currency of the Mexicans, in the absence of any such means of ascertaining the exact apportionment of commodities produced for sale.

The progress in agriculture was accompanied by a corresponding development of the resources of a pastoral people. Vast flocks of sheep ranged the mountain pastures of the Andes, under the guidance of native shepherds; while the Peruvians alone, of all the races of the New World, had attained to that important stage in civilisation which precedes the employment of machinery, by their use of the lower animals in economizing human labour. The llama, trained as a beast of burden, carried its light load along the steep paths of the Cordilleras, or on the great highways of Peru.

As the mythic Manco Capac was the instructor of the nation in agriculture, so also the divine daughter of the Sun introduced the arts of weaving and spinning. Such traditions serve at least to indicate the favourite directions of the national taste and skill,

which were specially displayed in the manufacture of a variety of woollen articles of ingenious patterns and the utmost delicacy of texture. Numerous examples of the woven textures of the Peruvians have been recovered from their ancient graves at Atacama and elsewhere; though it cannot be assumed that in these we have specimens of the rare and costly fabrics which excited the wondering admiration of the early Spaniards. In the arid soil and tropical climate of the great desert of Atacama, articles which prove the most perishable in northern latitudes are found, after the lapse of centuries, in perfect preservation. Of these I had an opportunity of examining a collection recovered by Mr. J. H. Blake from ancient huacas explored by him, and now preserved in his cabinet at Boston. They include specimens of cloth, wrought in dyed woollen thread, and sewed in regular and ornamental designs. Each piece is woven of the exact size which was required for the purpose in view, and some of them furnish proofs of ingenious skill in the art of weaving. The threads consist of two or more strands of dyed llama-wool twisted together; and elaborate patterns are woven into a soft and delicate web. The accompanying figure, though grotesque, is a good specimen of a complicated feat achieved in dyed woollen threads on the ancient Peruvian loom. It was found in a grave at Atacama, along with many other relics described in a subsequent chapter. Mr. Blake remarks, in reference to the discoveries of this class which rewarded his researches:—"In forming an opinion of the degree of skill displayed in the arts of spinning and weaving, by these specimens, it should be borne in mind that the implements in use were of the simplest contrivance. The only ones which have been discovered are simple distaffs, and among the articles obtained from the Atacama graves were several formed of wood and stone, such as are still in use among the Indians of Peru at the present day. Weaving on the loom has not been introduced among them. The warp is secured by stakes driven into the ground, and the filling-in is inserted by the slow process of passing it by hand over and under each thread alternately." It would be a grave error, however, to assume that we possess in such relics, recovered from the ordinary graves formed in the loose sand of the desert, the highest achievements of Peruvian

FIG. 19.—Peruvian Web.

skill. On the contrary, regarding them, as we must, as fair specimens of the common woollen tissues of the country, they confirm the probability that the costly hangings, and beautifully wrought robes of the Inca and his nobles, fully justified the admiration with which they are referred to by the Spanish writers of the sixteenth century.

Marvellous specimens of ceramic art are also noted among the manufactures ascribed to the Peruvians before the conquest, surpassing anything found in the common cemeteries of the race; but abundant proofs exist of the ingenuity of the ancient potter expended on utensils in daily use by the people at large, to render probable the accounts of such rare *chef-d'œuvres* executed by their cunningest workmen for the imperial service. So also we read of animals and plants wrought with wonderful delicacy, in gold and silver; and scattered with profuse magnificence about the apartments of the Peruvian nobles. Such specimens of goldsmiths' work no longer survive; but still the huacas of the ancient race are ransacked for golden ornaments, which prove considerable metallurgic skill, and leave no room to doubt that gold and silver were moulded and graven into many ingenious forms. Science and art had indeed made wonderful advances among this remarkable people; though with them, as with the Chinese, they were more frequently expended in the gratification of a craving for display, than in realizing triumphs of much practical value. Nevertheless, Peruvian civilisation had wrought out for itself many essential elements of progress adapted to its native soil. Its astronomical science admits, indeed, of no comparison with that of Mexico; and in lieu of the artistic picture-writing of the Mexicans, it employed the *quipus*, an artificial system of mnemonics not greatly in advance of the Red Indian wampum, to which it bears a close resemblance. In this it strikingly contrasts with the matured hieroglyphical inscriptions of Central America and Yucatan, which preserve evidences of progress alike in advance of the highest civilisation of the Aztecs and the Incas, and of all but the most civilized nations of ancient or modern centuries. But this higher phase of intellectual development must be reserved for consideration in its relations to the psychology of the whole continent.

The remarkable system of national polity doubtless originated in part from the docile nature still manifested by the descendants of the Peruvian people; and, when viewed in this connexion, it furnishes some key to the peculiar characteristics of their civilisation.

Their government was a sacerdotal sovereignty, with an hereditary aristocracy, and a system of castes more absolute seemingly than that of the Egyptians or Hindus. Something of the partial and unprogressive development of the Chinese mingled in the ancient Peruvians along with numerous other traits of resemblance to that singular people. Unlike the Mexicans, we see in their whole polity, arts, and social life, institutions of indigenous growth. It would be difficult to limit the centuries during which such a people may have handed on from generation to generation the slowly brightening torch. Their own traditions, preserved with the help of quipus and national ballads, are valueless on this point. But their institutions reveal some remarkable evidences of a people preserving many of the traits of man's social infancy, alongside of such matured arts and habits as could only grow up together around the undisturbed graves of many generations. Offerings of fruits and flowers took the place of the bloody human sacrifices of Aztec worship; but the suttee rites, which disclose their traces everywhere in the sepulchral usages of primitive nations, were retained in full force. The simple solidity of megalithic art gave an equally primitive character to their architecture, notwithstanding its application to many practical purposes of life; and the precious metals, though existing in unequalled profusion, were retained to the last solely for their unproductive contribution to barbaric splendour. The habits of pastoral life, by means of which the foremost nations of the Old World appear to have emerged out of primitive barbarism, were with them modified by the isolated haunts of the flocks peculiar to the strange region of mountain and plateau, where also they carried the next step in human progression, that of agriculture, to a degree of perfection probably never surpassed. They had advanced metallurgy through all its stages, up to that which preceded the use of iron; and with the help of their metal tools, displayed a remarkable skill in many mechanical arts. They did no more, because, under their peculiar local circumstances, and the repressive influences of the mild despotism of Inca rule, they had achieved all that they required.

A gentle people found abundant occupation in tilling the soil, without being oppressed by a labour which was lightened by the frequently recurring festivals of a joyous, and, in some respects, elevating national faith. Nor is it difficult to conceive of such a people continuing to pursue the even tenor of their way, with scarcely perceptible progression, through all the subsequent cen-

turies since their discovery to Europe; had not the hand of the conqueror ruthlessly overthrown the structure reared by many generations, and quenched the lamp of native civilisation which lighted them on their way. The conquerors of the sixteenth century have given expression to the astonishment with which they beheld everywhere evidences of order, contentment, plenty, and prosperity; and while the architectural magnificence of Montezuma's capital has so utterly disappeared as to suggest the doubt if it ever existed: the traveller along the ancient routes of Peruvian industry still meets on every hand ruins, not only of temples, palaces, and strongholds, but of terraced declivities, military roads, causeways, aqueducts, and other public works, that astonish him by the solidity of their construction and the grandeur of their design.

Reflecting on the striking contrasts which are apparent between the two great nations thus found at the highest stage of progress in Northern and Southern America, Prescott has remarked: "The Mexicans and Peruvians, so different in the character of their peculiar civilisation, were, it seems probable, ignorant of each other's existence; and it may appear singular that, during the simultaneous continuance of their empires, some of the seeds of science and of art, which pass so imperceptibly from one people to another, should not have found their way across the interval which separated the two nations. They furnish an interesting example of the opposite directions which the human mind may take in its struggle to emerge from darkness into the light of civilisation." Whilst, however, there seems little room for doubt that those two nations were ignorant of each other at the period of the discovery of America: there are indications in some of their arts of an earlier intercourse between the northern and southern continent. This, which is no doubt due in part to migrations, derives additional confirmation from a comparison of cranial forms, and the traces of artificial malformations of the head, as well as from other traits hereafter referred to, suggestive of a common origin for customs and races of the twin continents.

But between these two great divisions of the western hemisphere, in the curiously insulated region of Central America, traces of ancient civilisation abound, with evidences of a higher, if not longer enduring development than either. The closing annals both of Mexico and Peru have acquired a vivid interest from the incidents of Spanish conquest; and retain many romantic associations connected with the lustre of their conquerors. But the interest which

attaches to Central America and Yucatan derives little value from history. There, under the luxuriant forests of that tropical region, may still be studied the monuments of a lettered people, and the sculptures and symbolic inscriptions of an extinct faith, amid ruins which appear to have been already abandoned to decay before Cortes explored the peninsula in his lust of conquest. Their basso-relievos preserve the physiognomy of a race essentially diverse from the Mexicans; and their sculptured hieroglyphics show a process of inscription very far in advance of the picture-writings of the Aztecs. The magnitude and solidity of the ruins of Peru still attest the practical aim of works wrought there on a grand scale, and for purposes of more obvious utility than those of the Central American peninsula; and the characteristics of some of the Peruvian crania suggest striking analogies with the peculiar physiognomy of the northern basso-relievos, such as are no longer traceable when we turn to the Mexican race.

Neither the architecture, the astronomical science, nor the languages of Peru or Central America find a counterpart among any indications of incipient civilisation discernible in the region between the Rocky Mountains and the Atlantic. Yet there, amid tribes familiar to the European, the stock is to be sought, from which on many grounds it appears most reasonable to trace the predominant Mexican race of the era of the Conquest: the inheritors, but not the originators of the civilisation of the plateau. Some of the evidence of this is discussed in subsequent chapters, devoted to the consideration of native processes of writing, and to the physical characteristics of American races. But while the traditions of the Aztecs pointed to a migration from the north, the Toltecs whom they displaced can be assigned on no tangible evidence to a similar origin. Amid many diversities recognisable among the nations of the New World, the forest and prairie tribes, now clustering chiefly in the North-west, are the representatives of one great subdivision, the source of which may be sought in that northern hive stretching westward towards Behring Straits and the Aleutian Islands, with possible indications of an Asiatic origin. But for the more intellectual nations whose ancient monuments lie to the south of the Rio Grande del Norte; and perhaps also, even for the strange and mysterious race of the Mound-Builders: the most probable source of America's civilized and semi-civilized nations appears to be the southern plateaus of the Peruvian Cordilleras. In the copper regions of the north the abundant metal

supplied all wants too readily to stimulate to further progress; but the southern region rises through every change of climate under the vertical rays of the Equator; and its rocky steeps are veined with exhaustless treasures of metallic ores, in such a condition as to lead man on step by step from the infantile perception of the native metal as a ductile stone, to the matured intelligence of the metallurgist, mingling and fusing the contiguous ores into his most convenient and useful alloys. A branch of the same race, moving northward along the isthmus, may account for the abundant architectural remains of the central peninsula, consistently with its ethnographic traces; while beyond this, to the northward, we see in the conflicting elements of Mexican civilisation, the confluence of races from north and south, and the mingling of their diverse arts and customs under the favouring influences which the vale of Anahuac supplied.

CHAPTER XV.

ART-CHRONICLINGS.

IMITATIVE SKILL—ARCHAIC EUROPEAN ART—CONVENTIONAL ORNAMENTATION—ANALOGIES IN RITES AND CUSTOMS—ALTAR-RECORDS—COMMON SOURCE OF METALS—THE RACE OF THE MOUNDS—MOUND SCULPTURES—PORTRAIT CARVINGS—PULSZKY'S ICONOGRAPHIC RESEARCHES—PECULIAR FEATURES REPRESENTED—FEMALE PORTRAITURE—ANTIQUE ICONOGRAPHIC POTTERY—PECULIAR IMITATIVE SKILL—ANIMALS REPRESENTED—PROCESS OF CARVING—EXTENSIVE GEOGRAPHICAL RELATIONS—KNOWLEDGE OF TROPICAL FAUNA—THE TOUCAN AND MANATEE—WANDERINGS OF THE NATIONS—ANALOGOUS EUROPEAN SCULPTURES—PERUVIAN IMITATIVE SKILL—CARVED STONE MORTARS—NICOTIAN RELIGIOUS RITES — INSTITUTION OF THE PEACE PIPE — THE RED PIPE-STONE QUARRY—MANDAN TRADITIONS — SIOUX LEGEND OF THE PEACE PIPE—THE SACRED COCA PLANT—KNISTENEAUX LEGEND OF THE DELUGE—INDICATIONS OF FORMER MIGRATIONS—CHIMPSEYAN ART—IMITATIVE CLAYSTONE CARVINGS—TAWATIN IVORY CARVINGS—THE MEDICINE PIPE-STEM—SUPERSTITIOUS OBSERVANCES CONNECTED WITH THE TOBACCO PIPE—INDIAN LEGENDS AS TO ORIGIN OF TOBACCO.

In studying the elaborate sculptures of Central American architecture, one of the first of its peculiar characteristics to strike the eye is the predominance of the representations of natural objects, alike in its decorative details and in the symbolism of its hieroglyphic tablets. The human form, the head, the heart, the skull, the hand and foot, along with familiar objects of animate and inanimate nature, supplied the readiest architectural devices, and the most suggestive signs for attributes and ideas. In the imitation involved in such a style of art, resemblances may be traced to the productions of many partially civilized nations both of ancient and modern times. But in reviewing the primitive art of the New World, whether pertaining to extinct nations, like the Mound-Builders of Ohio and the architects of Yucatan, or to Indian tribes still occupying their old hunting grounds, the critical observer can scarcely overlook many peculiar manifestations of imitative skill. Though by no means to be regarded as the exclusive distinction of

the American races, this is a characteristic in which they present a striking contrast to the primitive races of Europe. Many of the implements and personal ornaments of the ante-Christian era of European art, designated the "Bronze Period," are exceedingly graceful in form, and some of them highly ornamented, but there is rarely a trace of imitative design. So also, though the peculiar form of one primitive class of gold ornaments, found in the British Isles, suggested a name derived from the calyx of a flower, which the cups of its rings seem in some degree to resemble, yet it is a mere fanciful analogy, for no example bears the slightest trace of ornament which would suggest that such similarity was present to the mind of the ancient British goldsmith. Where incised or graven ornaments are wrought upon the flower-like forms, they are the old chevron, or herring-bone and saltire patterns, which occur on the rudest clay pottery, alike of northern Europe and of America: though executed on the finer gold work with considerable delicacy and taste.

The correspondence between the forms and ornamentation of the rudest classes, both of domestic and sepulchral pottery of the Old and New World, appears, at first sight, remarkable; but it originates in the inartistic simplicity inseparable from all infantile art. The ornamentation is only an improvement on the accidents of manufacture. The aboriginal British and American potters appear to have both alike effected their first decorations by passing twisted cords round the soft clay. More complicated patterns were produced by plaited or knitted cords, or imitated in ruder fashion with the point of a bone-lance or bodkin. But it is only among the allophylian arts of Europe that such arbitrary patterns are perpetuated with improving taste and skill. The European vase and cinerary urn become more graceful in contour, and more delicate in material and construction, when they accompany the beautiful weapons and personal ornaments wrought in bronze. Nevertheless no attempt is made to imitate leaf or flower, bird, beast, or any simple natural object; and when in the bronze work of the later Iron period, imitative forms at length appear, they are chiefly the snake and dragon patterns, borrowed seemingly by Celtic and Teutonic wanderers, with the wild fancies of their mythology, from the far Eastern cradle-land of their birth.

This absence of every trace of imitation in the forms and decorations of the whole archaic art of northern Europe, is curious and noteworthy: for it is by no means an invariable characteristic of primitive art. In the simplest forms of ancient weapons, imple-

ments, and pottery, mere utility was the aim. The rude savage, whether of Europe or America, had neither leisure nor thought to spare for decorative art. His æsthetic faculty had not yet begun to influence his constructive instincts. Ideas of comparison, which enter so largely into the spirit of modern artistic design, and form so prominent an element in the artificial compositions of the modern orator and bard, were latent in those elder times. Art was the child of necessity, and borrowed its first adjuncts of adornment from the same sources whence it had received its convenient but arbitrary forms.

But the moment we get beyond this primitive and mere utilitarian epoch, the contrast between the products of European and American art is exceedingly striking; and their value to the ethnologist and archæologist becomes great, from the insight they give into the aspects of mental expression, and the intellectual phases of social life, among those unhistoric generations. The useful arts of the British allophylian progressed until they superinduced the decorative and fine arts. But the ornamentation was inventive, and not imitative; it was arbitrary, conventional, and singularly persistent in style. It wrought itself into all his external expressions of thought; and whatever his religious worship may have been, we look in vain for proofs of idolatry, among all the innumerable relics which have been recovered from supposed Druidical fanes, or the older cromlechs and tumuli of the British Isles.[1] The very opposite characteristics meet the eye the moment we turn to relics which illustrate the primitive arts of the New World. There, indications of imitative design meet us on every hand. Even the rude tribes of the North-west, though living in the simplest condition of savage life, not only copy the familiar animal and vegetable forms with which they are surrounded: but also represent, with ingenious skill, the novel objects of European art introduced to their notice. Even their plaited and woven grass and quill-work assume a pictorial aspect; and the pottery is not only ornamented with patterns derived from flowers and other natural objects, but more elaborated examples are occasionally moulded into the forms of animals. Still more is this the case with the tubes, masks, personal ornaments, and, above all, the pipe-heads of the Mound-Builders. Nor does it stop with such miniature productions of art. The same imitative faculty reappears in the great earthworks of Wisconsin and Ohio: where the ingenious artist has wrought out representations of natural objects on a scale akin to the colossal sphinx, that has

[1] Vide *Prehistoric Annals of Scotland*, vol. i. pp. 496-498.

looked forth from its stony eyes on the pyramid of old Cheops, while that gnomon of the desert sundial has traced, with its unresting shadow, the revolutions of thirty centuries.

The chronicles of America's ancient history recorded for us by such means are invaluable. The walls of Central American ruins are covered with voiceless hieroglyphics, and the costly folios of Lord Kingsborough's *Mexican Antiquities* have placed at the command of the scholars of both hemispheres the dubious ideography of native historians; but the artistic representations preserved alike in the bas-reliefs and statues of Palenque, or in the characteristic pipe-sculpture of the Ohio mounds, are as significant and easy of interpretation as those on the Ramesian tablets of Abbosimbul in Nubia, which demonstrate the existence, in the era of Rameses, of Semitic and Ethiopian races, with all their ethnical diversities as clearly defined as now.

Among the characteristics of ancient and modern nations discernible in peculiar rites and customs, or disclosed in their arts, there are some that indicate widely diffused hereditary influences, and so furnish a clue to remote affinities of race. The practice of circumcision, for example, which prevails both in Asia and Africa, wherever the influence of Semitic nations can be traced, strikingly illustrates the value of such indices. Another custom, little less ancient, is that of systematic cranial distortion: which prevailed among nations of both hemispheres, and is proved by the evidence of ancient sculpture to have been in use at the period of highest architectural art in Central America. The Indian war-trophy of the scalp, and its singular counterpart, the peace-pipe, are also significant usages of the New World; yet the former of these appears to have been common among ancient Asiatic nations. Herodotus refers to scalping as one of the most characteristic war-customs of the Scythians, and to their hanging the scalp-trophies to the warrior's bridal-rein. Hence the *ἀποσκυθίζειν* of Euripides, quoted by Rawlinson, when remarking on the resemblance of such ancient customs to those of the Red Indians. The correspondence is worthy of note, in connexion with others afterwards referred to, as possibly indicative of something more than a mere American counterpart to Egyptian and Oriental accumulations of trophies of the slain—the skulls, the hands, the ears, or even the foreskins,—repeatedly referred to in the Old Testament Scriptures, and recorded with minute detail on the paintings of Egypt, and the sculptures of Nimroud and Khorsabad. But no such analogies throw light on the singular usage of the peace-pipe. The ethnical

relations which it indicates belong exclusively to the New World, where it seems to perpetuate a significant symbolism derived from an extinct native civilisation. As such, it is well worthy of study by the American ethnologist, as the most ancient and curious of the many practices connected with the use of the strange nicotian stimulant. The pipe appears to have been associated with solemn religious rites and civic ceremonials, both in ancient and modern times. It bore a prominent part in the worship of the old Mound-Builders, and still retains its place among the paraphernalia of the inspired medicine-man or priest, and the most sacred credentials of the ambassador or war-chief.

The implements designed for the use of tobacco or other narcotic herbs, occupy a prominent place among the works of art of which the sacrificial mounds are the principal depositories. In accordance with the almost universal custom of barbarous and semi-civilized nations, the Mound-Builders devoted to their dead whatever had been most prized in life, or was deemed valuable for some talismanic charm. Hence the Mississippi mounds, and the ancient tombs of Mexico and Peru, disclose the same kind of evidence of the past as Wilkinson has deduced from the catacombs of Egypt, or Dennis from the sepulchres of Etruria. But in addition to this, while the altars of Egypt and Etruria have been long overthrown: the remarkable religious rites of the American Mound-Builders have preserved not only their altars, but offerings laid upon them before the first seed fell from whence grew the ancient monarchs of forests now styled primeval. The perishable garments of the dead have necessarily disappeared; and of instruments or utensils of wood or other combustible materials it is vain to expect a trace, where even metal has melted, and the stone been calcined in the blaze of the sacrificial fires; but articles of copper and stone, of fictile ware, and even of shell, ivory, and bone, have escaped the destructive flame, and withstood the action of time. In such enduring characters inscriptions are legibly graven upon the altars of the Mound-Builders. Let us try to translate their records into the language of modern thought.

What they record in regard to progress in mechanical arts and metallurgy, we have already attempted to decipher. The Mound-Builders were acquainted with several of the metals. They had both the silver and lead of Iowa and Wisconsin in use. Implements and personal ornaments of copper abound on their altars; and the mechanical combination of silver with the native copper of which they are made, indicates that they derived their supplies from Lake

Superior, where alone the metals have hitherto been found in the singular mechanico-chemical combination of crystals of silver in a copper matrix. The accidental, or at least unpremeditated results of their sacrificial fires, have in some cases fused the metallic offerings on the altars into a mass of molten copper; but the Mound-Builder had very imperfectly learned the old arts of Tubal-Cain. He did not smelt the ores, or melt the native copper and cast it into such moulds as his imitative skill, and his ability in modelling the potter's clay, abundantly fitted him to produce. Neither did he attempt the simpler process of welding, much less the valuable art of alloying the metals: although silver is found shaped into personal ornaments, and the sulphuret of lead was familiarly known to him, and is found in considerable quantities along with his other metallic remains.

Thus far, therefore, those inscriptions tell us that directly, or through some intermediate source, the Mound-Builders shared in the metallurgic wealth of the great copper region. We are reminded, accordingly, that the broad undulating prairie-lands of Wisconsin, with their remarkable symbolic earthworks, lie directly between the shores of Lake Superior and the region occupied by the Mound-Builders. The monuments of the latter abound with examples of their builders' arts, and are surrounded with varied proofs of settled occupation, civic and religious structures, and permanent defensive military works; while throughout Wisconsin the symbolic mounds stand almost alone, and have hitherto been found to contain no relics. Neither earthworks adapted to religious rites, nor military defences, attest that that region was anciently occupied by a numerous population, such as its many natural advantages fitted it to sustain. Hence the conjecture that the mineral country on the southern shores of the Great Lake was occupied by no settled tribe, but that its mines were the recognised source of supply for the whole population north of the Gulf of Mexico; and that different tribes throughout the vast basin of the Mississippi and its tributaries were wont to send working parties thither, as to a common region of the nations. Such an idea well accords with the further conjecture that the symbolic mounds of Wisconsin may be memorials of sacred rites, or pledges of peace and neutrality among nations from the various tributaries of the great river, as they annually met on this border-land of the common metallic storehouse. It is obvious that the Mound-Builders were a highly religious people. Their superstitious rites were of frequent occurrence, and accompanied with costly sacrifices; while in the numerous symbolic mounds of Wis-

consin, labour alone is the sacrifice, and the external form preserves the one idea at which their builders aimed.

So far, this theory of a sacred neutral ground and common mineral region is conjectural. Nevertheless, it involves certain undoubted facts to be borne in view for comparison with others of a diverse kind. In the once densely-peopled regions of Ohio and Illinois, where the works of the Mound-Builders abound, the river-valleys were occupied by an ingenious and industrious agricultural population: who, if not aggressive and warlike, employed their constructive skill on extensive works for military defence. Whencesoever the danger existed that they had thus to apprehend and guard against, there is no trace of its locality within the region lying immediately to the south of Lake Superior, through which their path lay to the great copper country. More probably offensive and defensive warfare was carried on between tribes or states of the Mound race settled on different tributaries of the same great water-system. But the growing civilisation of the nations of the Mississippi valley was also exposed to the aggression of barbarian tribes of the North-west; for if the Mound-Builders differed in culture and race from the progenitors of the modern Red Indian, some of their arts and customs render it probable that the latter were not unknown to them.

So far, then, we connect the race of the Mounds with the shores of Lake Superior, and thus trace out for them a relation to regions of the North. But the objects wrought by their artistic skill reveal no less certainly their familiarity with animals of southern and even tropical latitudes; and the materials employed in their manufactures include mica of the Alleghanies, the obsidian of Mexico, and jade and porphyry derived probably from the same region, or from others still farther south. Such facts warn us against any hastily constructed hypothesis of migrations for a people to whom the resources of so many dissimilar regions were partially known. We see in them, however, proofs of an extensive traffic; and may assume, as at least exceedingly probable, the existence of widely-extended commercial relations among that singular race. It must not be inferred, from the use of terms specifically applied to modern trade, that they are supposed to imply the possession of a currency and exchanges, of banking agencies, or manufacturing corporations. But, without confounding the traces of a rudimentary civilisation with characteristics of its mature development, there are proofs sufficient to justify the inference that the Mound-Builders traded with the copper of Lake Superior for objects of necessity and luxury

brought from widely-separated regions of the continent. Such exchanges may have been effected by many intermediate agencies, rather than by any direct traffic. But the river system of the Mississippi has furnished to the later forest tribes facilities for interchange under far less favourable circumstances; and such a systematic trade among an ingenious and settled people may have materially contributed to the progress of civilisation in the populous valleys of the Ohio.

Turning next to the carvings in stone recovered from the sacrificial and sepulchral mounds, they include objects of singular interest, some of which, at least, fully merit the designation of works of art. Compared, indeed, with the sculptures in porphyry and the great Calendar Stone of Mexico; the elaborate façades and columned terraces of Uxmal, Zayi, and Kabah; and the colossal statues, basso-relievos and hieroglyphics of Copan and Palenque: the art of the Mound-Builders, which expended its highest efforts in the decoration of a tube, or the sculpture of a pipe-bowl, may appear insignificant enough. But the imagination is apt to be impressed by mere size, and requires to be reminded of the superior excellence of a Greek medal or a Roman gem to all the colossal grandeur of an Egyptian Memnon. The architecture and sculpture of Central America preserve to us the highest intellectual efforts of the New World, and are animated by a historical significance which cannot be over-estimated. Nevertheless, examples among the miniature works of art of the Ohio Valley unquestionably admit of comparison with them in some essential elements of artistic skill. Apart, indeed, from the significance of the hieroglyphics with which the colossal statues of Copan are graven, they might rank with the monstrous creations of Hindoo art; whereas some of the objects taken from altars of "Mound City" furnish examples of imitative design and portrait-sculpture full of character and individuality.

The simplicity, variety, and minute expression in many of the miniature mound-sculptures, their delicacy of execution and imitative skill, render them just objects of interest and careful study. But foremost in every trait of value for the elucidation of the history, or characteristics of their workers, are the human heads, which, when the accuracy of many of the miniature sculptures of animals is considered, perpetuate, it can scarcely be doubted, faithful representations of the ancient people by whom they were executed. Equally well-authenticated portraiture of Umbrian, Pelasgian, or other mythical races of Europe would be invaluable to the ethnologist. It would solve some of the knottiest problems of his science,

better than all the obscure disquisitions to which the aboriginal population of Greece and Italy has given rise. American ethnologists, accordingly, have not failed to turn such iconographic evidence to even more account than legitimate induction will sustain, in support of their favourite argument for an indigenous unity of the whole ancient and modern races of the New World.

By means of such artistic relics we can determine the physical characteristics of the Mound-Builders, and of contemporary tribes or nations known to them. We also learn the character of fauna, native and foreign to the region occupied by them, with which they were familiar. I have had an opportunity of carefully inspecting the valuable collection of mound-sculptures in the possession of Dr. E. H. Davis of New York. In some cases, perhaps, their artistic merits have been overrated. Nevertheless the minute accuracy with which many of the objects of natural history have been copied is remarkable; and confirms the reliance to be placed on the ethnical portraiture perpetuated in their representations of the human head.

The discoveries made in one of the smaller tumuli of "Mound City" are thus described by its explorers: "Intermixed with much ashes, were found, not far from two hundred pipes carved in stone, many pearls and shell beads, numerous disks, tubes, etc., of copper, and a number of other ornaments of copper covered with silver, etc. etc. The pipes were much broken up, some of them calcined by the heat, which had been sufficiently strong to melt copper, masses of which were fused together in the centre of the basin. A large number have, nevertheless, been restored at the expense of much labour and no small amount of patience. They are mostly composed of a red porphyritic stone, somewhat resembling the pipe-stone of the *Coteau des Prairies*, excepting that it is of great hardness, and interspersed with small, various-coloured granules. The bowls of most of the pipes are carved in miniature figures of animals, birds, reptiles, etc. All of them are executed with strict fidelity to nature, and with exquisite skill. . . . . But the most interesting and valuable in the list are a number of sculptured human heads, no doubt faithfully representing the predominant physical features of the ancient people by whom they were made."[1]

Of these invaluable examples of ancient American iconography, one (Fig. 20) has attracted special notice, not only as the most beautiful head of the series, but from its supposed correspondence

[1] *Ancient Monuments of the Mississippi Valley*, p. 152.

to the type of the modern North American Indian. The workmanship of this head is described by its discoverers as "unsurpassed by any specimen of ancient American art which has fallen under the notice of the authors, not excepting the best productions of Mexico and Peru."[1] In the well-executed illustration which accompanies these remarks, the Red Indian features are unmistakably represented; nor has this failed to receive abundant attention, and to have ascribed to it even more than its due importance. Mr. Francis Pulszky, the learned Hungarian, thus comments on it in his *Iconographic Researches on Human Races and their Art*:—

Fig. 20.—Portrait Mound Pipe.

"A most characteristic, we may say artistically beautiful head, the workmanship of these unknown Mound-Builders, dug up and published by Squier, exhibits the peculiar Indian features so faithfully, and with such sculptural perfection, that we cannot withhold our admiration from their artistic proficiency. It proves three things: 1st, That these Mound-Builders were American Indian in type; 2d, That time (age ante-Columbian, but otherwise unknown,) has not changed the type of this indigenous group of races; and 3d, That the Mound-Builders were probably acquainted with no other men but themselves."[2] Such are the sweeping deductions drawn from premises supplied by a single example of mound-sculpture: or rather from the depiction of it in Messrs. Squier and Davis's volume; for after a careful examination of the original, its ethnic characteristics appear to me to be misrepresented in the illustration referred to. The artist has, no doubt undesignedly, given to his drawing much more of the typical Indian features than are traceable in the original. The nose, instead of having the salient Roman arch there represented, is perfectly straight, as shown

[1] *Ibid.*, p. 245, fig. 145. [2] *Indigenous Races of the Earth*, p. 183.

in the profile here given (Fig. 21), and is neither very prominent nor dilated. The mouth, though protuberant, is small; the lips are thin; instead of the characteristic ponderous maxillary region of the true Indian, the chin and the upper lip are both short; and the lower jaw, without any marked width between the condyles, is small, and tapers gradually towards the chin. Perhaps it is owing to this smallness of the lower portion of the head and face, that it

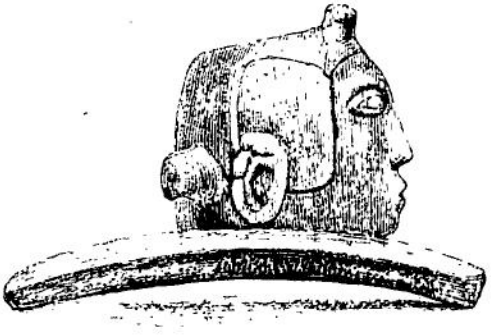


FIG. 21.—Portrait Mound Pipe.

was supposed to represent a female. But such an idea is not suggested by any marked characteristic either in the features or head-dress. The cheek-bones, though high, are by no means so prominent as in the original engraving. Indeed, the projection is almost entirely in front, giving a tumid cheek immediately under the eye. I doubt if any competent observer, ignorant of the history of this relic, would think of assigning it to an Indian type.[1]

It is apparent, therefore, that the inferences drawn from the representation of a single example of mound-sculpture are based on inaccurate premises. But even supposing the head to be as represented in the *Ancient Monuments of the Mississippi Valley*, or to reproduce, beyond all doubt, the features of the modern Indian: it would by no means prove the three propositions deduced from its discovery; since it is not the only example of sculptured portraiture discovered in the mounds, and we look in vain in other examples

[1] This head has already been made the basis of such sweeping generalizations that the accuracy of its description and representation becomes of great importance. Through the kindness of Dr. Davis, I have not only had opportunities of carefully examining the original; but I possess a cast of it, from which the drawings have been made, and subsequently compared with the original. A comparison of Fig. 20 with the corresponding view of the same object, as figured in Vol. I. of the *Smithsonian Contributions to Knowledge*, will show how much the American Indian characteristics of the latter are due to the pencil of the modern draughtsman.

for those points of Indian physiognomy which would first attract the eye of the imitative modeller or sculptor. The salient and dilated nose, prominent cheek-bones, massive jaw, and large mouth, may be assigned as the most noticeable characteristics; but all or nearly all of those are wanting in most of the other sculptured heads or masks. The character of these may be seen in the head engraved here (Fig. 22), derived from the same rich depository opened in "Mound City." It is cut in a compact yellowish stone. The nose is nearly in a line with the forehead, excepting at the point, which projects in a manner certainly by no means characteristic of Indian features; and though the lips protrude, as in the previous head, they are delicate, and the mouth is small. The ears in both are large, and in the latter are perforated with four small holes around their upper edges. In this case, from the delicacy of the features, it is suggested with greater probability than in the former example, that it has been designed after a female model. Another head,[1] executed in the same material, is much altered by fire. It has not, like the previous examples, been designed for a pipe-head, but is broken off from a complete human figure, or other larger piece of carving. It is much inferior as a work of art, and indeed approaches the grotesque or caricature. Nevertheless, it has considerable character in its expression; and no one familiar with the Indian cast of countenance would readily assign either to it or the previous specimen of mound-sculpture any aim at such representation, if unaware of the circumstances of their discovery. In this, as in others of the heads, the face is tattooed, and the ears have been perforated; and from the strongly attached oxide of copper, there can be little doubt they were decorated with rings or pendants of that metal; but the action of the sacrificial fires has only left an uncertain trace of the character of such ancient modes of personal adornment. Various other portrait-sculptures and terra-cottas, either found in the mounds, or discovered within the region where they chiefly abound, are figured in the works of Squier, Schoolcraft, Lapham, and in the American Ethnological Society's Transactions. The majority of them are inferior

Fig. 22.—Portrait Mound Pipe.

[1] *Ancient Monuments of the Mississippi Valley* (No. 143).

as works of art to those already described. But if they possess any value as indications of the physiognomical type of ancient American races, they tend to confirm the idea of a prevailing diversity, instead of a uniformity of cranial form and features.

The discovery of a sculptured head betraying traces of Indian features, among many of a different type, corresponds to another interesting fact, that animals foreign to the region, and even to the North American continent, are figured in the mound-sculptures. It presents a parallel to well-known examples of Etruscan vases moulded in the form of negros' heads; and of Greek pottery painted with the same characteristic features and woolly hair. Specimens of both are preserved among the collections of the British Museum, and furnish interesting evidence, alike of the permanency of the negro type, and of the familiarity both of Greek and Etruscan artists with the African features, long prior to the Christian era. Similar examples of foreign portraiture have attracted attention, on the older monuments of Egypt, and among the basso-relievos of the tomb of Darius Hystaspes at Persepolis: supplying interesting illustrations of imitative art employed in the perpetuation of ethnic peculiarities of physiognomy. Supposing, therefore, the Mound-Builders to have been a settled population, as essentially distinct from a contemporaneous Indian race, as the classic nations of antiquity differed from the barbarian tribes beyond the Alps and the Rhine: it is no more surprising to trace the genuine Indian features in mound-sculptures, than to discover those of the Dacian or the Gaul on the column of Trajan. It proves that the Mound-Builders were familiar with the American Indian type, but nothing more. The evidence indeed tends very distinctly to suggest that they were not of the same type; since the majority of sculptured human heads hitherto recovered from their ancient depositories do not reproduce the Indian features.

The physical type of the Mound-Builders will again come under consideration in a subsequent chapter; but it is interesting meanwhile to observe that even in the characteristics of this portrait-sculpture distinctive qualities appear. The imitative faculty manifests itself in expressive varieties of style, in modern Indian art. Some tribes, such as the Algonquins, confine themselves to literal reproductions of natural objects, while others, such as the Babeens, indulge in a grotesque and ingeniously diversified play of fancy. But the intellectual development implied in individual portraiture goes beyond this, and is rare indeed among

nations in the earlier stages of civilisation. Even among the civilized Mexicans, imitations of the human face and figure appear to have seldom passed beyond the grotesque; and although the sculptors of Central America and Yucatan manifested an artistic power which accords with the civilisation of a lettered people: yet in the majority of their statues and reliefs, we see the subordination of the human form and features to the symbolism of their mythology, or the mere requirements of decorative art. The peculiar characteristics of American art attracted at an early period the notice of the Spaniards; though, unfortunately, their superstitious bigotry led in many cases to the destruction of its most valuable examples. The following criticism on the sculptures of the pagan Mexicans, from the pen of Torquemada, is not the less useful from the trait of Franciscan prejudice which tinges all the reflections and narrations of his *Indian Monarchy*:—"It appears," he says, "as if God permitted that the figures of their idols should be the hideous semblances of their own souls; nor was it till after they had been converted to the Christian faith that they were ever able to model the figure of a man."[1] Again, the ingenious and learned Hungarian, Francis Pulszky, after comparing Indian, Mexican, Peruvian, and Central American works of art, remarks: "The hunter tribes of America evince no feeling for plastic beauty. Yet withal, like the Turks and the Celts, they have a considerable talent for decorative designs, and some perceptions of the harmony of colours. The originality and ornamental combination of their bead-work and embroidery are sufficiently known; but they always fail in rendering the human form. Far higher was the civilisation of that race which preceded them in the trans-Alleghanian States."[2] It thus seems that, amid the general prevalence of a peculiar aptitude for imitative art, alike among the ancient and modern nations of the American continent, the Mound-Builders, though working within a narrow range, developed a power of appreciating the minuter delicacies of plastic truth and beauty, such as is only traceable elsewhere among the choicest sculptures of Uxmal and Palenque.

To this imitative skill we owe, in like manner, other works which have an important significance in relation to the ethnological problems affecting the ancient population of the New World. In describing the miniature sculptures, including examples of human

[1] *Monarchia Indiana*, B. XIII. C. 34.
[2] *Iconographic Researches; Indigenous Races*, p. 182.

portraiture recovered from one of the sacrificial mounds of the Scioto Valley, reference has already been made to the curious collection of stone pipes found there, with the bowls of most of them carved into figures of beasts, birds, and reptiles. On these representations of objects of natural history, the ancient sculptors appear to have lavished their artistic skill with a degree of care bestowed on none other of the less perishable works, from which alone we can now judge of their intellectual development. "Not only," as Messrs. Squier and Davis observe, "are the features of the various objects represented faithfully, but their peculiarities and habits are in some degree exhibited. The otter is shown in a characteristic attitude, holding a fish in his mouth; the heron also holds a fish; and the hawk grasps a small bird in its talons, which it tears with its beak. The panther, the bear, the wolf, the beaver, the otter, the squirrel, the racoon, the hawk, the heron, crow, swallow, buzzard, the paroquet, toucan, and other indigenous and southern birds; the turtle, the frog, toad, rattlesnake, etc., are recognised at first glance;"[1] and in addition to those, the elk, the opossum, the owl, vulture, raven, duck, goose, and also the alligator, are named in a subsequent work.[2]

Among the mound sculptures now in the collection of Dr. Davis, of New York, a highly expressive head bears a close resemblance to that of the cougar, and the wild cat is represented in a variety of characteristic attitudes. The representations of birds are more numerous than those of beasts, and comprise between thirty and forty different kinds, of which nearly one hundred specimens have been found. Of these the explorers observe: "We recognise the eagle, hawk, heron, owl, buzzard, toucan (?), raven, swallow, paroquet, duck, grouse, and numerous other land and water birds. There are several varieties of the same species; for instance, among the owls, we find the great owl, the horned owl, and the little owl; there are also several varieties of the rapacious birds." One example, it is remarked, "will be readily recognised as the tufted heron, the most indefatigable and voracious of all the fisher varieties. The small body, long wings, extending to the extremity of the short tail, long thin neck, sharp bill, and tufted head, are unmistakable features. He is represented in the attitude of striking a fish, which is also faithfully executed. Nothing can surpass the truthfulness and delicacy of the sculpture. The

[1] *Ancient Monuments of the Mississippi Valley*, p. 152.
[2] *Antiquities of the State of New York*, p. 338.

minutest features are shown; the articulations of the legs of the bird, as also the gills, fins, and scales of the fish, are represented. As a work of art it is incomparably superior to any remains of the existing tribes of Indians."[1] The exuberant fancy of the ancient sculptors displays itself at times in humorous masks, and incongruous devices, such as a goose's head cut in a hard black stone, which on looking to the back becomes a human skull. Some of those works appear to have been executed, like the sportive sketches of the modern artist, with no other object than the carver's own gratification.

Unfinished carvings show the process by which they were wrought. A toad, in a characteristic attitude, but only roughly shaped out, "very well exhibits the mode of workmanship. While the general surface appears covered with striæ running in every direction, as if produced by rubbing, the folds and lines are clearly cut with some sort of graver. The marks of the implement, chipping out portions a fourth of an inch in length, are too distinct to admit the slightest doubt that a cutting tool was used in the work." Again, it is remarked of another pipe-head, blocked out into the form of a bird: "The lines indicating the feathers, grooves of the beak, and other more delicate features, are cut or graved on the surface at a single stroke. Some pointed tool appears to have been used, and the marks are visible where it has occasionally slipped beyond the control of the engraver. Indeed, the whole appearance of the specimen indicates that the work was done rapidly by an experienced hand, and that the various parts were brought forward simultaneously. The freedom of the strokes could only result from long practice; and we may infer that the manufacture of pipes had a distinct place in the industrial organization of the Mound-Builders." But this, though full of interest, need not surprise us, since the art of the arrow-maker, which required both skill and experience, was pursued among the forest-tribes as a special craft; nor is that of the pipe-maker even now wholly abandoned.

So far, therefore, we are enabled by such means to look back into that remote past. We see the industrious sculptor at his task; and holding silent converse with him over his favourite works, we learn somewhat of his own physical aspect, of the range of his geographical experience, his mental capacity and intellectual development. The pottery of the mounds, in like manner, adds to

[1] *Ancient Monuments of the Mississippi Valley*, p. 259.

our knowledge of the art and civilisation of the ages in which it was produced. But, next in importance to the evidence thus furnished, the miniature sculptures of the mounds derive their chief value from indications they supply of the extent and nature of the geographical relations of their owners. By the fidelity of the representations of so great a variety of subjects copied from animal life, they furnish evidence of a knowledge in the Mississippi Valley of fauna peculiar not only to southern but to tropical latitudes, extending beyond the Isthmus into the southern continent: and suggestive either of arts derived from a foreign source, and of an intercourse maintained with regions where the civilisation of ancient America attained its highest development; or else indicative of migration, and an intrusion into the northern continent, of the race of the ancient graves of Central and Southern America, bringing with them the arts of the tropics, and models derived from the animals familiar to their fathers in the parent-land of the race.

Of one of the most interesting of those exotic models, the *Lamantin* or *Manatee*, seven sculptured figures have been taken

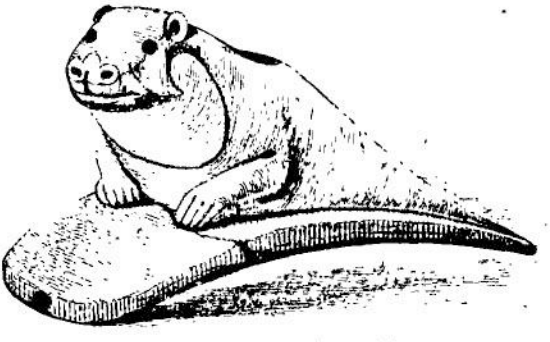


FIG. 23.—Manatee, Pipe Sculpture.

from the mounds of Ohio. This phytophagous cetacean, which, when full grown, measures from fifteen to twenty feet in length, is found only in tropical waters. Species haunt the estuaries and large rivers of Central and intertropical South America; as also those of both the eastern and western sides of tropical Africa: and sometimes ascend the rivers to a great distance from the sea. Examples were seen by Humboldt in the Rio Meta, a branch of the Orinoco, one thousand miles above its mouth. They are also found among the Antilles, and on the coast of the Florida peninsula. The most characteristic details in their form which chiefly attracted

attention when the Manatee was first brought under the notice of Europeans, are faithfully reproduced in the Mound sculptures. Fancy helped to exaggerate the peculiarities of this strange animal to the earliest European voyagers, and from them it received the name of the Siren. But its most remarkable feature is the fore paw, occupying the usual place of the cetacean fin, but bearing so close a resemblance to a human hand that the name Manatee is generally supposed to have been conferred on it by the first Spanish explorers on this account.[1] It is ranked according to ecclesiastical natural history as a fish; and its flesh is in special request at St. Christopher's, Guadaloupe, Martinique, and in various South American localities, during Lent. Its form is therefore familiar to the natives of South America, and was once equally well known to those of the Antilles, and probably to the ancient coastmen of the Gulf. But we must account by other means for the discovery of accurate representations of it among the sculptures of the far-inland Ohio mounds; and the same remark applies to the jaguar or panther, the cougar, the toucan; to the buzzard possibly, and also to the paroquet. The majority of those animals are not known in the United States; some of them are totally unknown within any part of the North American continent. Others may be classed with the paroquet, which, though essentially a southern bird, and common around the Gulf, does occasionally make its appearance inland; and might possibly become known to the untravelled Mound-Builder in his own northern home.

The importance of such evidences of a knowledge of tropical animals, and even of those confined exclusively to the southern continent, possessed by the ancient dwellers in the Scioto Valley, has not escaped the notice of the intelligent explorers of the mounds. It has even induced them, with becoming caution, to hesitate in assigning the name of the toucan to sculptures, concerning the design of which there could be no other reasonable ground for doubt. On this subject, accordingly, they remark, in special reference to the manatee sculptures: "These singular relics have a direct bearing upon some of the questions connected with the origin of the mounds. They are undistinguishable, so far as material and workmanship are concerned, from an entire class of remains found in them, and are evidently the work of the same hands with the other effigies of beasts and birds; and yet they faithfully represent animals found

[1] This derivation from the Spanish *Mano* is rejected by some etymologists for a native Carib one, *Manattoüi*.

(and only in small numbers), a thousand miles distant upon the shores of Florida, or—if the birds seemingly belonging to the zygodactylous order be really designed to represent the toucan,—found only in the tropical regions of South America. Either the same race, possessing throughout a like style of workmanship, and deriving their materials from a common source, existed contemporaneously over the whole range of intervening territory, and maintained a constant intercommunication; or else there was at some period a migration from the south, bringing with it characteristic remains of the land from which it emanated. The sculptures of the manatees are too exact to have been the production of those who were not well acquainted with the animal and its habits." Of the representations of the toucan, the accompanying woodcut (Fig. 24) will furnish a sufficient illustration. It is imitated with con-

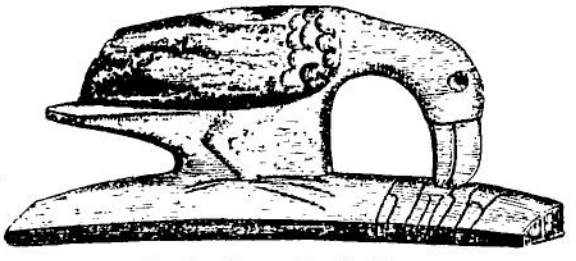


FIG. 24.—Toucan, Pipe-Sculpture.

siderable accuracy, though inferior to some of the finest specimens of mound sculpture. The most important deviation from correctness of detail is, that it has three toes instead of two before, although the two are correctly represented behind. It is stooping its head to take food from a rudely outlined human hand; and as it is known that the brilliant plumage of the toucan leads to its being frequently tamed by the natives of Guiana and Brazil, this tends not only to confirm the idea of its representation by the sculptures in question: but to suggest that the Mound-Builders may have had aviaries, like those in which the Aztec caciques assembled birds of splendid plumage and beautiful form from every part of their Mexican empire.

The questions, then, submitted here for consideration, as legitimate deductions from such evidence, are these:—Was the whole geographical area indicated by such a fauna, occupied, in those ages when the altars of the Ohio mounds still blazed with sacrificial fires, by a common race?—or must we recognise in such indications of familiarity with the natural history of the tropics, and even of

the southern continent, proof that that very people, who derived all their metal from the great northern regions of Lake Superior, had themselves emigrated from southern latitudes rich in metallic ores?

That such a migration, rather than a contemporaneous existence of the same race over the whole area thus indicated, and maintaining intercommunication and commercial intercourse, is the more probable inference, is suggested on various grounds. If the Mound-Builders had some of the arts and models, not only of Central but of Southern America: they also employed in their ingenious manufactures the pearls and shells of the Gulf of Florida; obsidian from Mexico; mica believed to have been brought from the Alleghanies; jade, such as that described by Humboldt among the rare materials of ancient manufacture in Chili; the lead of Wisconsin; and the copper, and probably the silver, of Ontonagon and the Keweenaw peninsula. The fact indeed that some of their most elaborate carvings represent birds and quadrupeds belonging to latitudes so far to the south, naturally tends to suggest the idea of a central region where arts were cultivated to an extent unknown in the Mississippi Valley; and that those objects, manufactured where such models are furnished by the native fauna, remain only as evidences of ancient intercourse maintained between these latitudes and the localities where now alone such are known to abound. But in opposition to this, full value must be given to the fact that neither the relics, nor the customs which they illustrate, pertain exclusively to southern latitudes; nor are such found to predominate among the singular evidences of ancient and more matured civilisation which abound in Central and Southern America. The varied nature of the materials employed in the arts of the Mound-Builders, we must also remember, indicates a very wide range of relations; though it cannot be assumed that these were maintained in every case by direct intercourse.

The earlier students of American archæology, like the older Celtic antiquaries of Britain, gave full scope to a system of theorizing which built up comprehensive ethnological schemes on the very smallest premises; but in the more judicious caution of later writers there is a tendency to run to the opposite extreme. Perhaps Messrs. Squier and Davis indulge at times in an exaggerated estimate of the merits of the remarkable works of art discovered and published as the result of their joint labours; but subsequent critics have either unduly depreciated them, or solved the difficulties at-

tendant on such discoveries, by ascribing their manufacture to an undetermined foreign source. Mr. Schoolcraft specially manifests a disposition to underrate the artistic ability discernible in some of them; while Mr. Haven, who fully admits their skilful execution, derives from that very fact the evidence of foreign manufacture. After describing the weapons, pottery, and personal ornaments obtained from the mounds, the latter writer adds, "and, with these were found sculptured figures of animals and the human head, in the form of pipes, wrought with great delicacy and spirit from some of the hardest stones. The last-named are relics that imply a very considerable degree of art, and if believed to be the work of the people with whose remains they are found, would tend greatly to increase the wonder that the art of sculpture among them was not manifested in other objects and places. The fact that nearly all the finer specimens of workmanship represent birds, or land and marine animals belonging to a different latitude; while the pearls, the knives of obsidian, the marine shells, and the copper equally testify to a distant, though not extra-continental origin, may, however, exclude these from being received as proofs of local industry and skill."[1]

A reconsideration of the list already given of animals sculptured by the ancient pipe-makers of the mounds, cannot fail to satisfy the inquirer that it is an over-statement of the case to say that nearly all belong to a different latitude. The real interest and difficulty of the question lie in the fact of discovering, along with so many spirited sculptures of animals pertaining to the locality, others represented with equal spirit and fidelity, though belonging to diverse latitudes. To those familiar with early Scandinavian and British antiquities, such an assignment of the mound sculptures to a foreign origin, on account of their models being in part derived from distant sources, must appear a needless assumption which only shifts without lessening the difficulty. On the sculptured standing stones of Scotland—belonging apparently to the closing era of Paganism, and the first introduction of Christianity there,—may be seen the tiger or leopard, the ape, the camel, the serpent, and as supposed by some, the elephant and walrus, along with other representations or symbols, borrowed, not like the models of the Mound-Builders, from a locality so near as to admit of the theory of direct commercial intercourse, or recent migration, but from remote districts of Asia, or from Africa. The most noticeable dif-

[1] *Archæology of the United States*, p. 122.

ference between the imitations of foreign fauna on the Scottish monuments, and in the ancient American sculptures, is that the former occasionally betray, as might be expected, the conventional characteristics of a traditional type; while the latter, if they furnish evidence of migration, would in so far tend to prove it more recent, and to a locality not so distant as to preclude all renewal of intercourse with the ancestral birth-land. Traces of the same re-production of unfamiliar objects are, indeed, apparent in the mound sculptures. The objects least truthfully represented, in some cases, are animals foreign to the region where alone such works of art have been found. But the South American toucan of the mound sculptor, figured on a previous page, is certainly not inferior to the accompanying specimens of the Peruvian modeller's imitative skill, wrought on a vessel of black ware (Fig. 25), now in the collection

Fig. 25.—Peruvian Black Ware.

of the Society of Antiquaries of Scotland; though it will be remembered that the latter are the work of an artist to whom the original may be presumed to have been familiar. Several of the animals engraved in the *Ancient Monuments of the Mississippi Valley* fall far short of the fidelity of imitation ascribed to them in the accompanying text; but the characteristic individuality of others displays remarkable imitative power. The lugubrious expression given to more than one of the toads is full of humour; and some of the ruder human heads may be described as portrait-sketches in the style of *Punch*. But after making every requisite deduction from the exaggerations of enthusiastic observers, abundant evidence of artistic skill and ingenuity remains to justify the

wonder that a people capable of executing such works should have left no large monuments of their art. While, however, this affords no sufficient ground for transferring their origin to another region, we may still look with interest for the discovery of analogous productions in some of the great centres of native American civilisation.

With one or two stray exceptions, objects precisely similar to the mound sculptures have not hitherto been met with, beyond the valleys where other traces of the Mound-Builders abound; but the points of resemblance between numerous miniature stone mortars found in Peru and the sculptured mound-pipes, are too striking to

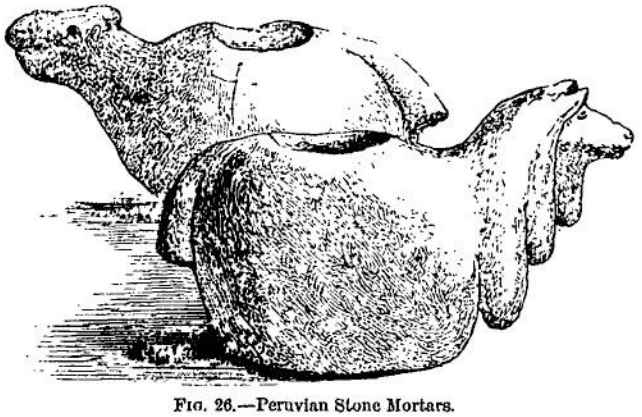


FIG. 26.—Peruvian Stone Mortars.

be overlooked. Of the two examples given here (Fig. 26), the one is a llama, from Huarmachaco, in Peru, in the collection of the Historical Society of New York. It is cut in a close-grained black stone, and measures four inches long. The other, of darkish brown schist, is from a drawing made by Mr. Thomas Ewbank, while in Peru. The greater number of those seen by him represent the llama and its congeners, the alpaca, guanoco, and vicuna. They are all hollowed precisely like the bowl of the sculptured mound-pipes, but have no lateral perforation or mouth-piece. Their probable use was as mortars, in which the Peruvians rubbed tobacco into powder, working it with a small pestle until it became heated with the friction, when it was taken as snuff. The transition from this practice to that of inhaling the burning fumes is simple; and the correspondence between the ancient Peruvian tobacco-mortar and the stone pipe of the Mound-Builder is well worthy of note, when taken into consideration along with the imitations of birds of the southern continent found among the sculptures of the northern

mounds. Dr. Tschudi describes four of those Peruvian relics preserved at Vienna, carved in porphyry, basalt, and granite; and he adds: "How the ancient Peruvians, without the aid of iron tools, were able to carve stone so beautifully, is inconceivable."

The absence of any but such miniature carvings in the northern mounds may also merit special notice when viewed in connexion with the ideas of religious worship suggested by the contents of the mound altars. Idolatry, in its most striking, and also in some of its most barbarous forms, prevailed, as we know, among the nations of the Mexican Valley, at the period of the Conquest. The monuments of Yucatan and Central America leave no room to doubt that the worship of such visible impersonations of Divine attributes as their sculptors could devise formed a prominent part of their religious services. Reference has also been made in a previous chapter to rudely modelled and sculptured idols, accompanying numerous other ancient remains, in sepulchral deposits in Tennessee. Others have been found in the Huacals of Chiriqui, on the Isthmus of Panama, along with numerous gold relics and many fine specimens of pottery. These facts render it the more singular that, amid so many traces of imitative sculpture, no relics obviously designed as objects of worship have been dug up in the mounds, or found in such circumstances as to connect them with the religious practices of the Mound-Builders. But the remarkable characteristics of the elaborately sculptured pipes, and their obvious connexion with services accompanying some of the rites of sacrifice or cremation, may indicate their having played an important part in the religious solemnities of the ancient race; and on this the arts and customs of modern tribes help to throw some curious light.

So far as we can now infer from evidence furnished by relics connected with the use of the tobacco-plant, it seems to have been as familiar to the ancient tribes of the North-west, and the aborigines of the Canadian forests, as to those of the American tropics, of which the *Nicotiana tabacum* is a native. No such remarkable depositories indeed have been found to the north of the great lakes as those disclosed to the explorers of the tumuli in the Scioto Valley; but even now the tobacco-pipe monopolizes the ingenious art of many tribes; and some of their most curious legends and superstitions are connected with the favourite national implement. Among them the dignity of time-honoured use has conferred on it a sacredness, which survives with much of its ancient force; and to this accordingly the student of America's primeval antiquities

is justified in turning, as a link connecting the present with that ancient past. But it is worthy of note that the form of the mound-pipes is altogether peculiar, and differs essentially from the endless varieties of pattern, wrought by Indian ingenuity from the most diverse materials. Some consideration, therefore, of the arts of the modern pipe-sculptor, and of native customs and traditions associated with the use of tobacco, is necessary, as a means of comparison between ancient and modern races of the New World.

In the Old World, the ideas connected with the tobacco-pipe are prosaic enough. The chibouk may, at times, be associated with the poetical reveries of the oriental day-dreamer, and the hookah with pleasant fancies of the Anglo-Indian reposing in the shade of his bungalow; but its seductive antique mystery, and all its symbolic significance, pertain to the New World. Longfellow, accordingly, fitly opens his *Song of Hiawatha* with the institution of "the peace-pipe." The Master of Life descends on the mountains of the prairie, breaks a fragment from the red stone of the quarry, and, fashioning it with curious art into a pipe-head, he fills it with the bark of the red willow, chafes the forest into flame with the tempest of his breath, and kindling it, smokes the calumet as a signal to the nations. The tribes of the ancient aborigines gather at the divine summons from river, lake, and prairie, to listen to the warnings and promises with which the Great Spirit seeks to guide them; and this done, and the warriors having buried their war-clubs, they smoke their first peace-pipe, and depart:—

> "While the Master of Life, ascending,
> Through the opening of cloud-curtains,
> Through the doorways of the heaven,
> Vanished from before their faces,
> In the smoke that rolled around him,
> The pukwana of the peace-pipe!"

In this, as in other passages of his national epic, the American poet has embodied cherished legends of the New World: placing the opening scene of *Hiawatha* on the heights of the red pipe-stone quarry of Coteau des Prairies, between the Minnesota and Missouri rivers.

On the summit of the ridge between these two tributaries of the Mississippi rises a bold cliff, beautifully marked with horizontal layers of light grey and rose or flesh-coloured quartz. From the base of this a level prairie of about half a mile in width runs parallel to it; and here it is that the famous red pipe-stone is

procured, at a depth of from four to five feet from the surface. Numerous excavations indicate the resort of Indian tribes of many successive generations to the locality. "That this place should have been visited," says Catlin, "for centuries past by all the neighbouring tribes, who have hidden the war-club as they approached it, and stayed the cruelties of the scalping-knife, under the fear of the vengeance of the Great Spirit who overlooks it, will not seem strange or unnatural when their superstitions are known. That such has been the custom there is not a shadow of doubt, and that even so recently as to have been witnessed by hundreds and thousands of Indians of different tribes now living, and from many of whom I have personally drawn the information."[1]

The enterprising traveller speaks elsewhere of thousands of inscriptions and paintings observed by him on the neighbouring rocks; while the feeling in which they originate was thus illustrated by an Indian whose portrait he painted when in the Mandan country. "My brother," said the Mandan, "you have made my picture, and I like it much. My friends tell me they can see the eyes move, and it must be very good; it must be partly alive. I am glad it is done, though many of my people are afraid. I am a young man, but my heart is strong. I have jumped on to the Medicine Rock; I have placed my arrow on it, and no Mandan can take it away. The red stone is slippery, but my foot was true; it did not slip. My brother, this pipe which I give to you I brought from a high mountain; it is towards the rising sun. Many were the pipes we brought from thence, and we brought them away in peace. We left our totems on the rocks; we cut them deep in the stones; they are there now. The Great Spirit told all nations to meet there in peace, and all nations hid the war-club and the tomahawk. The Dahcotahs, who are our enemies, are very strong; they have taken up the tomahawk, and the blood of our warriors has run on the rocks. We want to visit our medicines. Our pipes are old and worn out."

The Medicine or Leaping-Rock, here referred to, is a detached column standing between seven and eight feet from the precipitous cliff; and the leap across this chasm is a daring feat which the young warriors are ambitious of performing. It was pointed out to Catlin by a Sioux chief, whose son had perished in the attempt. A conical mound marked the spot of his sepulture; and though

[1] *Illustrations of the Manners, etc., of the North American Indians.* By Geo. Catlin. Eighth edition. Vol. ii. p. 167.

the sanctity of this ancient neutral ground has been invaded, and the powerful nation of the Sioux now refuse to permit other tribes to have access to it, this is of quite recent occurrence. The memorials of many tribes on the graven rocks, and numerous excavations, sepulchral mounds, and other earthworks in the vicinity: all confirm the Indian tradition, that from time immemorial this has been recognised as neutral ground by the tribes to the west, and many of those to the east of the Mississippi; to which they have made regular pilgrimages to renew their pipes from the rock consecrated by the footprints of the Great Spirit. The marks of his footsteps are pointed out, deeply impressed in the rock, and resembling the track of a large bird!

Mandan traditions respecting this sacred spot have a special interest; for the migrations of that once powerful Indian nation have been traced from the country lying between Cincinnati and Lake Erie, down the valley of the Ohio, over the graves of the ancient Mound-Builders, and thence up the great western branch of the Mississippi, until the extinction of nearly the whole nation, by the ravages of the small-pox in the year 1838, at their latest settlements on the Upper Missouri. The site of their last homes, lies to the north of the Sioux's country, in whose possession the pipe-stone quarries are now vested by the law of the strongest. To the Sioux, accordingly, the guardianship of the traditions of the locality belongs. For, although they have thus set at defiance its most sacred characteristic, and so slighted the mandate of the Great Spirit, they do not the less strongly hold by the superstitious ideas associated with the spot.

One of these legends is connected with the peculiar features of the scene. Five large granite boulders form prominent objects on the level prairie in the vicinity of the pipe-stone quarries; and two holes under the largest of them are regarded by the Sioux as the abodes of the guardian spirits of the spot. Catlin, who broke off and carried away with him fragments of these sacred boulders, remarks: "As for the poor Indian, his superstitious veneration of them is such, that not a spear of grass is broken or bent by his feet within three or four roods of them, where he stops, and, in humble supplication, by throwing plugs of tobacco to them, solicits permission to dig and carry away the red stone for his pipes." Here, according to traditions of many independent tribes, not only took place the mysterious birth of the peace-pipe, but the postdiluvian creation of the human race.

The tradition of the institution of the peace-pipe is thus narrated by the Sioux: "Many ages after the red men were made, when all the tribes were at war, the Great Spirit called them together at the Red Rocks. He stood on the top of the rocks, and the red nations were assembled on the plain below. He took out of the rock a piece of the red stone, and made a large pipe. He smoked it over them all; told them that it was part of their flesh; that though they were at war, they must meet at this place as friends; that it belonged to them all; that they must make their calumets from it, and smoke them to him whenever they wished to appease him or get his goodwill. The smoke from his big pipe rolled over them all, and he disappeared in its cloud. At the last whiff of his pipe a blaze of fire rolled over the rocks and melted their surface. At that moment two Indian maidens passed in a flame under the two medicine rocks, where they remain to this day. The voices of Tsomecostee and Tsomecostewondee, as they are named, are heard at times in answer to the invocations of the suppliants, and they must be propitiated before the pipe-stone is taken away."

An offering of tobacco is the usual gift, and it appears to have been used in similar acts of worship from the earliest period of intercourse with Europeans. In the narrative of the voyage of Drake, in 1572, it is stated that the natives brought a little basket made of rushes, and filled with an herb which they called *tobak*. This was regarded as a propitiatory offering; and the writer subsequently notes: they "came now the second time to us, bringing with them, as before had been done, feathers and bags of *tobak* for presents, or rather, indeed, for sacrifices, upon this persuasion that we were gods." In all probability the practice of smoking originated in the use of the intoxicating fumes for purposes of divination, or other superstitious rites; and the universality of the later use of the plant has not entirely divested it of its sacred character. Harriot, one of the voyagers by whom Virginia was discovered, tells, in his "Briefe and True Report of the New Found Land of Virginia," of a plant which has diverse names in the West Indies, according to the several places and countries where it is used. The Spaniards generally call it *tobacco*, but it is there named by the natives *uppówoc*. "This *uppówoc* is of so precious estimation among them, that they think their gods are marvellously delighted therewith, whereupon sometime they make halowed fires, and cast some of the powder therein for a sacrifice. Being in a storme upon the waters, to pacifie

their gods they cast some up into the aire, and into the water; so a weare for fish being newly set up, they cast some therein and into the aire; also, after an escape of danger, they cast some into the aire likewise; but all done with strange gestures, stamping, sometime dancing, clapping of hands, holding up of hands, and staring up into the heavens, uttering therewithal and chattering strange words and noises."

Such practices and ideas of propitiatory offerings among southern Indian tribes of the sixteenth century, abundantly prove that the offerings of tobacco still made by the Sioux to the spirits that haunt the pipe-stone quarry, are of no merely local origin, but were anciently as universal as the peace-pipe itself. Nor were such religious associations confined to the favourite narcotic of the northern continent. Among the Peruvians the coca plant took the place of tobacco; and Dr. Tschudi states that he found it regarded by the Indians as something sacred and mysterious. "In all ceremonies, whether religious or warlike, it was introduced for producing smoke at the great offerings, or as the sacrifice itself. During divine worship the priests chewed coca-leaves; and, unless they were supplied with them, it was believed that the favour of the gods could not be propitiated." Christianity, after an interval of upwards of three hundred years, has not eradicated the Indian's faith in the virtues of the sacred plant. In the mines of Cerro de Pasco, masticated coca is thrown on the hard veins of metal to propitiate the gnomes of the mine, who, it is believed, would otherwise render the mountains impenetrable; and leaves of it are secretly placed in the mouth of the dead, to smooth his passage to another world. Thus we find, in the superstitions perpetuated among the Indians of the southern Cordilleras, striking analogies to those which survive among the Sioux, and give character to the strange rites practised by them at the red pipe-stone quarry, on the Coteau des Prairies.

One of the Indian traditions connected with that locality, which seem to perpetuate the idea of a general deluge, was thus narrated to Catlin, by a distinguished Knisteneaux on the Upper Missouri, on the occasion of presenting to him a handsome red-stone pipe: "In the time of a great freshet, which took place many centuries ago, and destroyed all the nations of the earth, all the tribes of the red men assembled on the Coteau des Prairies, to get out of the way of the waters. After they had gathered here from every part, the water continued to rise, until at length it covered them all

in a mass, and their flesh was converted into red pipe-stone. Therefore, it has always been considered neutral ground; it belongs to all tribes alike, and all were allowed to get it and smoke it together. While they were all drowning in a mass, a young woman, Kwaptahw, a virgin, caught hold of the foot of a very large bird that was flying over, and was carried to the top of a high cliff not far off, that was above the water. Here she had twins, and their father was the war-eagle, and her children have since peopled the earth." The idea that the red pipe-stone is the flesh of their ancestors is a favourite one among different tribes. When Catlin and his party attempted to penetrate to the sacred locality, they were stopped by the Sioux, and one of them addressing him, said: "This red pipe was given to the red men by the Great Spirit. It is a part of our flesh, and therefore is great medicine. We know that the whites are like a great cloud that rises in the east, and will cover the whole country. We know that they will have all our lands; but if ever they get our red-pipe quarry they will have to pay very dear for it." Thus is it that even in the farthest West the Indian feels the fatal touch of that white hand; and to the intrigues of interested white traders is ascribed the encroachment of the Sioux on the sacred neutral ground, where, within memory of living men, every tribe on the Missouri had smoked with their enemies, while the Great Spirit kept the peace among his red children.

Apart, then, from such indications of an artistic power of imitation, by which the ancient pipe-sculptors are distinguished, it becomes an object of interest to observe other elements, either of comparison or contrast, between the memorials of the Mound-Builders' skill, and numerous specimens of pipe-sculpture produced by modern tribes.

Notwithstanding the endless variety which characterizes the ancient Mound-Builders' pipes, one general type is traceable through the whole. A curved base forms the stem and handle, from the centre of which rises the bowl, as shown in Fig. 19, so that it is complete as found; whereas the modern Indian generally employs a pipe-stem, and ascribes to it the peculiar virtues of the implement. The medicine-man decorates it with his most elaborate skill, and it is regarded with awe and reverence by the whole tribe. The stem would seem, therefore, to be characteristic of the modern race; if indeed it be not a distinguishing memorial of the diverse origin of the Northern tribes, from Toltecan and other ancient nations. One idea which such comparisons suggest is that in the sacred asso-

ciations with the pipe of the Mound-Builders, we have indications of contact between a migrating race of Central or Southern America, where no superstitious pipe-usages have been found, and one of the Northern tribes among whom such superstitions are most intimately interwoven with all their sacred mysteries.

The utmost variety distinguishes the pipes of the modern Indians: arising in part from the local facilities they possess for a suitable material, and in part also from the special style of art and decoration which has become traditional with the tribe. The easily wrought red pipe-stone has been generally sought after, from the beauty of its colour and texture, as well as the mysterious virtues attached to it. But the pipe-sculptures of many tribes can be distinguished no less certainly by the material, than by the favourite conventional pattern.

Among the Assinaboin Indians a fine marble, much too hard to admit of minute carving, but susceptible of a high polish, is cut into pipes of graceful form, and made so extremely thin, as to be nearly transparent. When lighted the glowing tobacco shines through, and presents a singular appearance at night, or in a dark lodge. Another favourite stone is a coarse species of jasper, also too hard to admit of elaborate ornamentation. But the choice of material is by no means invariably guided by the facilities which the position of the tribe affords. Mr Kane informs me that, in coming down the Athabaska river, when near its source in the Rocky Mountains, he observed his Assinaboin guides select the favourite bluish jasper from among the water-worn stones in the bed of the river, to carry home for the purpose of pipe manufacture, although they were then fully five hundred miles from their lodges. Such traditional adherence to the choice of materials peculiar to a remote source, as well as the perpetuation of special forms and patterns, are of value as clues to former migrations, and indications of affinity among scattered tribes.

The Chippewas, at the head of Lake Superior, carve their pipes out of a dark close-grained stone procured from Lake Huron; and frequently introduce groups of animals and human figures with considerable artistic skill. *Pabahmesad*, or the Flier, an Old Chippewa, still living on the Great Manitoulin Island in Lake Huron, is generally known as *Pwahguneka*, the Pipe Maker, literally "he makes pipes." Though brought in contact with the Christian Indians of the Manitoulin Islands, he resolutely adheres to the pagan creed and rites of his fathers, and resists all the encroach-

ments of civilisation. His materials are the *muhkuhda-pwahgunah-beck*, or black pipe-stone of Lake Huron; the *wahbe-pwahgunah-beck*, or white pipe-stone, procured on St. Joseph's Island; and the *misko-pwahgunahbeck*, or red pipe-stone of the Coteau des Prairies. His saw, with which the stone is first roughly blocked out, is made of a bit of iron hoop, and his other tools are correspondingly rude. Nevertheless the workmanship of Pabahmesad shows him to be a master of his art; as will be seen from a characteristic

FIG. 27.—Chippewa Pipe.

illustration of his ingenious sculpture, engraved here (Fig. 27), from the original, in the museum of the University of Toronto.

But the most elaborate and curious specimens of pipe-sculpture are those chiefly executed by the Chimpseyan or Babeen Indians, on the North Pacific coast. They have received the name of Babeen, or big-lip Indians, from the deformation of the under lip in the women of the tribe, produced by the insertion of a piece of wood into a slit made in infancy, and increased in size until the lip protrudes like the bill of a duck. Other and not less singular customs mark the distinction between the sexes, and are perpetuated even after death. Their women are wrapped in mats and placed on an elevated platform, or in a canoe raised on poles, while the bodies of the males are invariably burned. The Chimpseyans and the Clalam Indians, occupying Vancouver's Island and the coasts in the neighbourhood of Charlotte's Sound, carve bowls, platters, and other utensils out of a blue claystone or slate from which also they make their pipes, and decorate them with many ingenious and grotesque devices. One of the smaller and simpler of these pipes is shown in Fig. 28; but large and complicated designs are common sometimes inlaid with bone or ivory, and embracing every native or foreign object adapted to the sculptor's fancy. Those of strictly native design consist of human figures, and of strange monstrosities

intermingling human and brute forms, in which curious analogies may frequently be traced to the sculptures of Central America.

FIG. 28.—Babeen Pipe.

But the powers of observation and imitation are most strikingly illustrated in claystone carvings of objects of foreign origin. The collections formed by the United States Exploring Expedition, now at Washington, include numerous specimens of this class, representing European houses, forts, boats, horses, and firearms; and reproducing in minute detail the cords, pulleys, and other minutiæ of the shipping which frequents the coast. The example shown in Fig. 29 is a curious combination of native and foreign elements; and may be regarded as the conventional representation by the native artist, of a bear hunt in the vicinity of one of the Hudson Bay Company's stations. Possibly the frog is introduced to indicate the swampy nature of the scene of action; but it is a favourite object of imitation. The animal-heads on some of the human

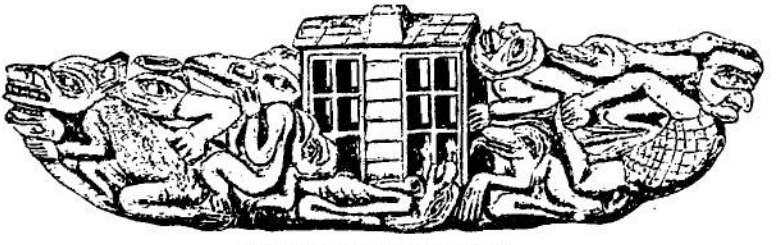


FIG. 29.—Babeen Pipe-Sculpture.

figures represent grotesque masques, which constitute another favourite branch of native art. They are carved in wood, the size of life, and brilliantly coloured; and are repeated in miniature on many of the claystone carvings.

In some of the larger pipes, the entire group presents much of the grotesque exuberance of fancy, mingled with imitations from nature, which constitute the charm of ecclesiastical sculptures of the thirteenth century. Figures in the oddest varieties of posture are ingeniously interlaced, and connected by elaborate ornaments;

the intermediate spaces being perforated, so as to give great lightness to the whole. But though well calculated to recall the quaint products of the mediæval sculptor's chisel, such comparisons are

Fig. 30.—Tawatin Ivory carving.

not suggested by any imitation of European models. Their style of art is thoroughly American; and the traits of the same peculiar devices and modes of thought which mark some of the most finished sculptures of Yucatan are replete with interest, when thus recognised reappearing in regions so remote, and in the productions of rude Indian tribes. This is even more strikingly illustrated in a class of ivory carvings executed by the Tawatin Indians on Fraser River, of which Figs. 30, 31 are examples. Some of the points of resemblance are obvious and unmistakable; and confirm the traces of early intercourse, if not of a common relationship, between savage tribes of the North-west and ancient civilized nations of the Mexican plateau, which have been already suggested from peculi-

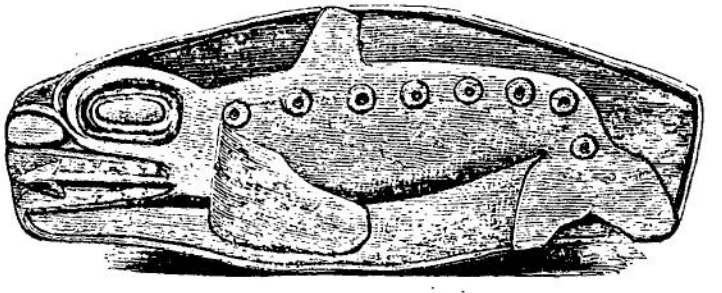


Fig. 31.—Tawatin Ivory carving.

arities in language and customs common to both. The Tawatin ivory carvings are executed with minute delicacy. On one of them shown here (Fig. 31), the imitative faculty of the artist is shown in the representation of a whale. The design is worthy of

notice, from its combination of certain characteristics of native art with ideas common to that of the Old World long prior to the discovery of America. Trifling as the correspondence may seem, it is curious to find the Indian carver of the Pacific coast giving to the monster of the deep the same forked tongue which formed the conventional attribute of the dragons and leviathans of Mediæval Europe.

But while the modern Indian thus rivals in the elaborateness of his art the ingenious pipe-sculpture of the mounds, all his superstitious reverence is reserved for the pipe-stem. On it depends the safety of the tribe in peace, and its success in war. It is guarded accordingly with jealous care, and produced at the Medicine dance or the War-Council with mysterious ceremonies. But even on such great occasions, so long as the medicine pipe-stem is used, it is a matter of indifference whether the bowl attached to it be of the richest carving, or a common trader's clay pipe. Many special privileges and honours pertain to its bearer; and it is not only disrespectful, but unlucky, to pass between him and the fire. An ornamental tent is provided for his use, and his other official accoutrements are so numerous that frequently he requires to maintain several horses for their transport. A bear-skin robe is employed for wrapping up the consecrated pipe-stem, and thus enveloped, it is usually borne by the favourite wife of the dignitary. But it is never allowed to be uncovered in her presence; and should a woman, even by chance, cast her eyes on it, its virtues can only be restored by a tedious ceremony.

Among the Indian portraits executed by Mr. Paul Kane, is one of Kea-keke-sacowaw, head chief of the Crees, whom he met on the Saskatchewan, engaged in raising a war-party against the Blackfeet. He had with him eleven medicine pipe-stems, the pledges of different bands that had enlisted in the cause. The grim old chief appears decorated with his war-paint, and holding in his hand a pipe-stem adorned with the head and plumage of an eagle. Before beginning his work, the artist had to witness the ceremony of "opening the medicine pipe-stem," in the course of which he smoked each of the eleven pipes; and, thus enlisted in the cause, this painting was esteemed a great medicine, calculated to contribute materially to the success of the war-party.

A young Cree half-breed confessed to the painter that, in a spirit of daring scepticism, he had once secretly thrown down the medicine pipe-stem and kicked it about; but soon after, its official

carrier was slain, and such misfortunes followed as left no doubt on his mind of the awful sanctity pertaining to this guardian and avenger of the honour of the tribe.

But all the ideas and superstitions which such usages illustrate, are peculiar to the modern Indians. The pipes of the Mound-Builders show that they used no pipe-stem; and the same appears to have been the case with the Mexicans before the Conquest. Throughout the whole of Lord Kingsborough's great work, traces of the use of the tobacco-pipe are rare, and where they do occur they tend to confirm the idea that it was not invested, either in Mexico or Central America, with such sacred attributes as were attached to it by the ancient race of the Mississippi Valley: and which, under other but no less peculiar forms, are maintained among the Indian tribes of the North-west.

Various early writers on the customs of the American Indians refer to expiatory sacrifices, which present some striking, though rude analogies, to the ancient offerings by fire on the mound-altars. Hearne describes a custom among the Chippewas, after the shedding of blood, of throwing all their ornaments, pipes, etc., into a common fire, kindled at some distance from their lodges; and Winslow narrates of the Nanohigganset of New England, that they had a great house ordinarily resorted to by a few, whom he supposes to be priests; but he adds, "Thither, at certain times, resort all their people, and offer almost all the riches they have to their gods, as kettles, skins, hatchets, beads, knives, etc., all which are cast by the priests into a great fire that they make in the midst of the house."[1] The analogies, however, which appear to be traceable in such practices of tribes remote from the localities of the old Mound-Builders, are after all slight, and lack the most important elements which give their peculiar character to the ancient mound-altars. It may be, rather, that in the mode of indulging in the favourite narcotic bestowed by America on the Old World, we have perpetuated as a practice of mere sensual indulgence, what was once a solemn rite associated with the mysterious worship of the sacred enclosures and the altar-mounds of the Mississippi Valley. Oviedo, who is our earliest authority, at least for any minute account of tobacco-smoking among the native tribes, speaks of it as an evil custom practised among the Indians of Hispaniola to produce insensibility; and greatly prized by the Carribees, who called tobacco *kohiba*, and "imagined, when they were drunk with the fumes of it,

[1] *Mass. Hist. Coll.*, Second Series, vol. ix. p. 94.

the dreams they had were in some sort inspired."[1] Again, Girolamo Benzoni narrates, in his travels in America, recently translated from the edition of 1753 by Rear-Admiral Smyth: "In La Española, and the other islands, when their doctors wanted to cure a sick man, they went to the place where they were to administer the smoke, and when he was thoroughly intoxicated by it the cure was mostly effected. On returning to his senses, he told a thousand stories of his having been at the council of the gods, and other high visions."[2]

Many Indian legends ascribe a divine origin to tobacco. A chief of the Susquehannas told of two hunters of the tribe sharing the venison they had cooked with a lovely squaw, who suddenly appeared to them; and on returning to the scene of their feast thirteen moons after, they found the tobacco-plant growing where she had sat. Harriot, who sailed in Sir Walter Raleigh's expedition of 1584, states that the Indians of Virginia regarded tobacco as a means of peculiar enjoyment, in which the Great Spirit was wont freely to indulge, and that he bestowed it on them that they might share in his delights. Repeated allusions also refer to its intoxicating effects as an influence analogous to that which produced the visions and inspirations of their fasting dreams. It seems, therefore, by no means improbable, that the original practice of inhaling the fumes of tobacco was associated exclusively with superstitious rites and divination; so that the tobacco-plant may have played a part in the worship of the ancient Mound-Builders, analogous to that of the inspiring vapour over which the Delphic tripod was placed, when the priestess of Apollo prepared to give utterance to the divine oracles.

[1] *Historia General de las Indias*, second edit. p. 74.
[2] *History of the New World.* By Girolamo Benzoni. Hakluyt Society, 1857.

CHAPTER XVI.

PRIMITIVE ARCHITECTURE.

EARTH-PYRAMIDS—ARCHITECTURAL DISCLOSURES OF COPAN—MYSTERIOUS RUINS OF PALENQUE—SCULPTURES OF A LOST RACE—REAPPEARANCE OF THE ANCIENT TYPE—WIDE EXTENT OF RUINS—QUICHE PALACES OF UTATLAN—TRADITIONS OF A LIVING CITY—CHARACTER OF THE ARCHITECTURE—UNIQUE STYLE OF ORNAMENTATION—NATIVE CHARACTER OF THE CIVILISATION—CONTRAST OF MEXICO AND PERU—BUILDINGS OF THE INCAS—CYCLOPEAN MASONRY AT CUZCO—PERUVIAN ROADS AND AQUEDUCTS—MEGALITHIC ERA OF ART.

THE American continent preserves, in its earth-pyramids, hill-forts, and river-terrace enclosures, the familiar forms of earliest constructive skill, found wherever the footprints of infantile human progress remain uneffaced by the works of later intruders. There, however, such traces of the combined labour of man in the earlier stages of transition from the nomade hunter to the settled claimant of the soil, present themselves to our study on a scale, as to number and magnitude, without a parallel among such earth-types of the walled cities of Nimrod, and the pyramids of Cheops or Cephrenes. They are characteristic memorials of the partially developed but long extinct civilisation of that mysterious people, known from such remains as the race of the Mound-Builders. Their structures could not gather richness from the fretting tooth of time. They were truly builders, but not architects. Buried beneath their ancient mounds lie sculptures fit to vie with some of the adornments of mediæval architecture; but on the edifices themselves, so far as now appears, they expended none of that decorative design which elevates the constructive art of the builder into one of the fine arts, and blends together the ornamental and the useful in the most enduring of all national chronicles. To study the true native architecture of the New World, we have to leave behind us those monuments of forgotten generations; and, amid the tropical forests of Central America and Yucatan, explore the silent memorials of a no less mysterious but more eloquent past. There

that lamp of memory was lit which still glows for us with the golden stains of time; and its ruined reliquaries rise amid a tropical vegetation so luxurious, that the very air is oppressive from the fragrance of the banana, pine-apple, orange, lemon, and plantain. There still tower above forests dense with the growth of ages, ruined temples which stood before the cocoa-nut palm and the gigantic ceiba encroached on their abandoned courts and terraced walls; and into which the men of long-buried generations built their love of power, their wealth of thought and strength, and all the proudest aspirations of their faith.

It was at Copan that the enterprising explorer of the historical antiquities of Central America first beheld the forgotten memorials of its ancient civilisation; and, as he says, with an interest perhaps stronger than he had ever felt in wandering among the ruins of Egypt, he explored, amid the dense forest in which they were buried, the remains of an ancient city, some of the monuments of which, to his experienced eye, presented, with more elegance of design, a workmanship equal to the finest monuments of Egypt. Here at length were not only traces of the obliterated history of an unknown race, but "works of art, proving, like newly-discovered historical records, that the people who once occupied the continent of America were not savages." Toiling onward through the tangled growth of tropical vegetation, intermingled with friezes and fragments of statuary, and ascending the steps of a vast enclosure, terraced with sculptured tiers perfect as those of the Roman Amphitheatre, he looked down on the evidence of a native energy and intellect not less wonderful than all that America has borrowed from nations of another continent. The traveller had himself stood in the silent shadows of Petra, and wandered amid the ruins of Egypt's cities of the dead. These have each their story, and awake the memories of a definite past; but when he asked the native Indians who were the builders of those ruins? they answered only *Quien sabe?* Who knows? And he had no wiser answer to substitute for their stolid reply. "There were no associations," he exclaims, "connected with the place; none of those stirring recollections which hallow Rome, Athens, and

'The world's great mistress on the Egyptian plain;'

but architecture, sculpture, and painting, all the arts which embellish life, had flourished in this overgrown forest; orators, warriors, and statesmen, beauty, ambition, and glory, had lived and passed

away; and none knew that such things had been, or could tell of their past existence. Books, the records of knowledge, are silent on this theme. The city was desolate. No remnant of this race hangs round the ruins, with traditions handed down from father to son, and from generation to generation. It lay before us like a shattered bark in the midst of the ocean, her masts gone, her name effaced, her crew perished, and none to tell whence she came, to whom she belonged, how long on her voyage, or what caused her destruction; her lost people to be traced only by some fancied resemblance in the construction of the vessel, and, perhaps, never to be known at all. The place where we sat, was it a citadel from which an unknown people had sounded the trumpet of war, or a temple for the worship of the god of peace? Or did the inhabitants worship the idols made with their own hands, and offer sacrifices on the stones before them? All was mystery, dark, impenetrable mystery, and every circumstance increased it. In Egypt, the colossal skeletons of gigantic temples stand in the unwatered sands, in all the nakedness of desolation; here, an immense forest shrouded the ruins, hiding them from sight, heightening the impression and moral effect, and giving an intensity and almost wildness to the interest."[1]

Such were the impressions produced on the mind of this intelligent explorer when first he gazed on one of the ruined cities of Central America. The existence of such remains had long before awakened attention; though, amid the circulation of vague and exaggerated rumours of their grandeur and extent, no very definite idea could be formed of the truth. So early as 1750, a party of Spaniards travelling in the province of Chiapas, suddenly found themselves in the midst of ruins covering an area of some twenty miles in extent, and known to the Indians only by the descriptive designation of *Casas de Piedras*. It was the first stray waif of the wreck of an extinct Southern empire, which, with every fresh discovery, acquires increasing interest and mystery. Mexico had been a province of Spain for nearly two centuries and a half; yet neither note of Spanish conquistador, nor vaguest native tradition, indicates the knowledge that such a city had ever existed. It received the name of Palenque, by which it is still known, from a rude Indian village in its vicinity; and since then it has been explored by Royal Commissioners acting under the orders of Charles III. of Spain; by a second Royal Commission, of which Dupaix was the

[1] Stephens' *Travels in Central America*, vol. i. chap. v.

leader, under the authority of Charles IV.; by M. Baradere, the enterprising and zealous investigator, to whom we owe the publication of Dupaix's work; and, finally, by the modest, but more effective labours of Messrs. Stephens and Catherwood. The results have familiarized us with the sculptures, hieroglyphic tablets, paintings, and bas-reliefs in stucco: and with the ceiled halls and corridors inroofed by overlapping stones, of an architecture which wrought out edifices of magnificent extent without the use of the arch; but to this day no more is known of the nameless city, or its builders, than of the significance of the hieroglyphics which mock its explorers with their tantalizing records.

But if the hieroglyphic inscriptions still defy every attempt at decipherment, the sculptures to which they are attached speak a language intelligible to all. Take, for example, one of the Palenque bas-reliefs, drawn by Catherwood from the original on one of the piers of the vast terraced building called the Palace. Its hieroglyphics are meaningless, but we can be at no loss in deciphering the record it preserves of the physical characteristics, as well as of the intellectual and artistic capacity of the people by whom the nameless city was reared. It supplies an unmistakable answer to the oft renewed question,—"Were they the same race as the modern Indians?" The bas-relief includes a group of three figures, with the strange costume and decorations, and the stranger physiognomy of the unknown people who once lorded it in the palaces of Palenque over the mighty city, and the regions which contributed the means whereby such proud structures were reared and maintained. The original, which had been modelled in a composition hard as stone, was found in a nearly perfect condition, and had been painted in elaborate colours of which many traces remained. "The principal figure," Mr. Stephens notes, "stands in an upright position, and in profile, exhibiting an extraordinary facial angle of about forty-five degrees. The upper part of the head seems to have been compressed and lengthened, perhaps by the same process employed upon the heads of the Choctaw and Flathead Indians. The head represents a different species from any now existing in that region of country; and supposing the statues to be images of living personages, or the creations of artists according to their ideas of perfect figures, *they indicate a people now lost and unknown.*"[1]

Bearing in remembrance that the intelligent traveller ultimately

[1] Stephens' *Travels in Central America*, vol. ii. chap. xviii.

favoured the idea that the race of the Builders was the same as the degenerate Indians still occupying the villages around their ruined cities, it is important to separate his actual observations from theories subsequently made to harmonize with Morton's *Typical American Race.*[1] At Palenque he recognised the remains of a cultivated, polished, and peculiar people, who had passed through all the stages incident to the rise and fall of nations, reached their golden age and perished, without even a tradition of their name surviving. Cortes, in his march from Mexico to Honduras, by the Lake of Peten, must have passed within a few leagues of the city; but its ruins were already desolate as now, or it cannot be doubted that the conqueror would have made its name famous by a desolation like that which illumines "the Venice of the Aztecs." But the American traveller saw in those regions, thus rich with the ruins of an extinct golden age, not only the degraded and servile Indian, but the scarcely less degraded descendant of the Spanish conqueror; and, therefore, he cherished the belief that, with restored freedom, and the influences of a native civilisation, the Indian might be elevated to the capacity of the ancient builders: and once more hew the rocks which he quarried, and carve the timber that he felled, into sculptures and devices, as full of intellect, and as replete with native originality of thought, as the carvings and reliefs on the ruins of Palenque. Nor do I doubt the possibility of such an elevation for even more degraded races than the Indians of Central America. But if once more a race of native sculptors should hew out the representations of their civic and religious ceremonials in equally skilful bas-reliefs, it is contrary to all experience that they would sculpture forms and features totally different from their own. It is important, therefore, to recall to mind an incidental and unheeded note recorded by Mr. Stephens when leaving the ruins of Palenque, with the character of its sculptures still fresh in his memory. "Among the Indians," he observes, "who came out to escort us to the village, was one whom we had not seen before, and whose face bore a striking resemblance to those delineated on the walls of the buildings. In general, the faces of the Indians were of an entirely different character, but he might have been taken for a lineal descendant of the perished race."[2] Such a chance reappearance of the ancient type entirely corresponds with the experience of the ethnologist in the Old

[1] *Travels in Yucatan*, vol. ii. chap. xxiv.
[2] Stephens' *Travels in Central America*, vol. ii. chap. xxi.

World. The ruined Alhambra is not the work of the race to whom it now pertains, but the blood of the old Moors of Granada can still be traced among the rural population of Christian Spain. The population of modern Italy includes the descendants of Gaul, Lombard, Ostrogoth, Arab, Norman, Frank, and Austrian intruders; but among them all the observant traveller still detects, at times, the old native Roman type, essentially the same as he sees sculptured on the tomb of Scipio, or the column of Trajan: the descendants of the race by whom the marble palaces of Rome were reared, while yet the ancestors of Gaul and Goth, Arab, Norseman, and German, were but the rude mound-builders of Europe, or nomades of Asiatic deserts.

It does not come within the purpose of this work to review in detail the numerous monuments of ancient American art, described in narratives already familiar to the reader. It will suffice to indicate their extent and character. In the first explorations of Messrs. Stephens and Catherwood in the interior of Central America, Chiapas, and Yucatan, they visited eight ruined cities, the very existence of which was in most cases unknown to the inhabitants of the country in which they lie; and in the subsequent narrative of their journey in Yucatan, Mr. Stephens describes the results of visits to forty-four ruined cities, or architectural sites. The materials thus contributed to America's ancient native history are invaluable. Zealous antiquaries of the United States had been surveying the mounds of the Ohio and Mississippi Valleys, exploring the strange earthworks of Wisconsin, and diligently searching for Phœnician characters or Scandinavian runes on the Dighton rock, to give substantiality to the dream of mighty confederacies that had preceded them. While the great tide of emigration swept westward, exterminating the Indian with his forests, and effacing the feeble footprints on his trail, the enterprising pioneer sent back word from time to time of ruined enclosures and fenced cities, which gathered new features at every fresh narration, and filled the imagination with vague and wondering faith in a mighty past. But meanwhile the inhabitants of Spanish America had been dwelling for centuries in the very midst of ruins wonderful for their magnitude, rich variety, and beauty, with a stolid indifference even more wonderful than the disclosures it so long withheld. Of the fifty-two sites of ancient edifices, some of them the ruins of vast cities, examined by Mr. Stephens, few had ever been visited by white men; and when it is considered how small a portion of the surface

of Yucatan, or Central America, has been explored, it is difficult for fancy to exaggerate the wonders of native art and civilisation which have yet to be revealed.

Some of the desolate cities thus discovered have been traced to the era of the Conquest, but they serve thereby to illustrate by their contrast the remote and independent origin of the more ancient remains. The court of the native kings of Quiché was held in the palaces of Utatlan; and that city was the most sumptuous one visited by the Spaniards. But when explored by Mr. Stephens, corn was growing among the ruins, and the site was in use by an Indian family claiming descent from the royal line, while occupying a miserable hut amid the crumbling Quiché palaces. Their remains appear to be of Mexican rather than of Yucatan or Central American character. The principal feature now remaining, called El Sacrificatorio, closely corresponds to the Mexican teocallis; and in entire accordance with this, a figure of baked clay, found among the ruins, presents the modern Indian features, executed in a style of art greatly inferior to the totally diverse sculptures of Palenque and other ruins of unknown date.[1]

The intermixture of traces of two very distinct eras within the ancient Aztec dominions, is as clearly recognisable as in the Hellenic and Byzantine art of the later empire of Constantine. The general character of the terra-cottas and sculptured figures of Mexico is rude and barbarian; yet in some of the ancient ruins, as at Oaxaca, terra-cotta busts and figures have been found which justly admit of comparison with corresponding remains of classic art.[2] Such indications of two entirely distinct periods and styles accord with all the most ancient native traditions, which concur in the idea of successive migrations, foreign intrusion, and the displacement of a highly civilized people. Of those, Ixtlilxochitl gives a coherent digest, which, apart from his dates, seems to find confirmation from the diverse characteristics of ancient art in Mexico and Central America. According to the old Tezcucan chronicler: on the intrusion of the Aztec conquerors, which he places in the middle of the tenth century, the Toltecs, who escaped their fury, spread themselves southward over Guatemala, Tecuantepec, Campeachy, Tecolotlan, and the neighbouring coasts and islands.[3] The architectural chronicles, however, would rather suggest that, in deserting

[1] *Vide* Engraving, "Figures found at Santa Cruz del Quiché," Stephens' *Travels in Central America*, vol. ii.

[2] Vide *Antiquités Mexicaines*, tom. iii. pl. 36.

[3] Ixtlilxochitl *Relaciones*, MS. No. 5, quoted by Prescott.

Anahuac for the southern regions, where such abundant traces have been found, the Toltecs migrated to a country already in occupation by a branch of the same highly civilized race.

Of the two distinct classes of ruins in Mexico, Central America, and Yucatan, including relics of widely different periods, the one consists chiefly of edifices reared as well as occupied by the races supplanted and enslaved by the conquering Spaniards; the other finds its illustrations in Palenque, Quirigua, Copan, and other cities, already in ruins before the intruding European mingled the descendants of native conquered and conquering races in one indiscriminate degradation. That such remains are found only in a few imperfect and scanty traces on the Mexican soil, accords with the transitional characteristics of its latest native conquerors, who appear to have played the same part there as the Tartar intruders on the southern sites of ancient Asiatic civilisation. But as we descend from the Mexican plateau along the south-eastern slope of the Cordilleras, remains of art, such as tradition ascribes to the genius and refinement of the peaceful and industrious Toltecs, multiply on every hand; and even mingle with ruder arts of a remote antiquity recovered from the graves of Chiriqui and the Isthmus of Panama.

But a special interest attaches to the ruined capital of Quiché, though of a different and accidental character; for it was there that the indefatigable explorers first heard that, on the other side of the Great Sierra, was a living city, large and populous, occupied by descendants of the ancient race of Builders, as in the days before the Conquest or the discovery of America. In earlier years the Padre, their informant, had climbed to the lofty summit of the Sierra, and from thence, at a height of ten or twelve thousand feet, looked over an immense plain, extending to Yucatan and the Gulf of Mexico, and beheld at a great distance, as had been told him, a large city, with turrets white and glittering in the sun. The Indian traditions tell that a native race, speaking the Maya language, guard there the marches of their land, and put to death every one of the race of strangers who approaches its borders. "That the region referred to," says Stephens, "does not acknowledge the government of Guatemala, has never been explored, and that no white man ever pretends to enter it, I am satisfied;" and—speculating on the possibility that there still live the Indian inhabitants of an Indian city, as Cortes found them, who can solve the mystery that hangs over the traces of native civilisation, and perchance even read the hieroglyphic inscriptions of Copan and Palenque,—he exclaims: "One

look at that city was worth ten years of an everyday life!"[1] In the sober thoughts of a later period, the enthusiastic traveller held to the belief that the Padre had not only looked down on the white towers and temples of a vast city, but that the city might still be the abode of a native race, the descendants of the civilized nations of ante-Columbian centuries. As he draws his interesting narrative to a close, he once more turns "to that vast and unknown region, untraversed by a single road, wherein fancy pictures that mysterious city, seen from the topmost range of the Cordilleras, of unconquered, unvisited, and unsought aboriginal inhabitants." Its exploration presented to the traveller's mind a noble field for future enterprise; as unquestionably it is, even should the result only prove, as is most probable, another mysterious and magnificent pile of ruins. He died in the belief that in the direction of that mysterious city lay discoveries for some future explorer, which would constitute a triumph to look back upon with delight through life. Since then, numerous exploring expeditions have gone forth from the United States; the mystery of a polar sea has been deemed object enough for brave men to face perils as great as any that such an enterprise could involve; but the romance of the New World, this living city enshrining the mysteries of its strangely obscure yet significant past, has lapsed into dim forgetfulness, as a mere traveller's dream.

Referring, then, to the works of Dupaix, Stephens, Catherwood, and Waldeck for the details of native American architecture; it may be noted, as a general characteristic of the ruined cities of Central America, that they betray everywhere evidences of a barbaric pomp, wherein utility and convenience are sacrificed to architectural magnificence. Though constructed, moreover, for the most part, of stones of moderate size, there is still that same laborious aim at vast and massive solidity which constitutes the essential characteristic of megalithic architecture. Huge pyramidal mounds and terraces are reared as platforms for ponderous structures of massive grandeur, but only of a single storey in height; and presenting, in the interior, a narrow and imperfectly-lighted vault, roofed in by converging walls, which supplied the poor substitute for the arch. It is the comparatively unintellectual civilisation of a nation in that stage of advancement where art and even science have been sufficiently developed to contribute to the sensuous cravings for magnificent display, but are as yet of little avail for mental and moral progress. Such architectural feats are the work of absolutism,

[1] Stephens' *Travels in Central America*, vol. ii. chap. xi.

controlled by the predominating influences of a priesthood, under which pomp and oppressive magnificence take the place of the real power of the throne; and the people are subjected to a despotism the more dread, because of its subtle direction of national festivities, no less than of fasts and sacrifices.

But while we witness everywhere, among the ruins of Central America, the same evidences which are seen in the architecture of Egypt, Hindustan, Assyria, and Babylon, of a people's strength and ingenuity expended at the will of some supreme authority, and working out results in which they could have little real interest or pleasure: it is vain to attempt to trace to such foreign sources the models of those creations of native power and skill. They are in all respects essentially original and unique. The pyramidal mound structures are no more Egyptian than the earthworks of the Scioto Valley; the hieroglyphics bear little more resemblance to those of the Nile than the rude Indian carvings on Dighton rock; and the cornices, bas-reliefs, and architectural details of every kind, supply at most only stray resemblances to ancient forms: cheating the eye, like chance notes of a strange opera in which the ear seems to catch the illusive promise of some familiar strain. While, moreover, the architecture and sculpture are essentially native, they betray, amid their barbaric waste of magnificence, a wondrous power of invention, and frequent indications of a refined taste capable of far higher development. The elaborate ornaments of the Casa del Enano, at Uxmal, are described by Stephens as incomprehensible in design, very elaborate, sometimes grotesque, yet often simple, tasteful, and beautiful. "But," he adds, "the style and character of these ornaments were entirely different from those of any we had ever seen before, either in that country, or any other; they bore no resemblance whatever to those of Copan or Palenque, and were quite as unique and peculiar." Again, the principal building of the ruined city of Uxmal supplies wonderful evidence of ancient power, taste, and skill. A terrace of cut stone, six hundred feet in length, forms the platform on which a second and third terrace of narrower bases are raised, to a height of thirty-five feet; and on this is reared the noble structure of the Casa del Gobernador, decorated, throughout its whole façade of three hundred and twenty feet, with rich, strange, and elaborate sculpture. Of this magnificent ruin Mr. Stephens remarks: "There is no rudeness or barbarity in the design or proportions; on the contrary, the whole wears an air of architectural symmetry and grandeur; and as the stranger ascends the steps and

casts a bewildered eye along its open and desolate doors, it is hard to believe that he sees before him the work of a race in whose epitaph, as written by historians, they are called ignorant of art, and said to have perished in the rudeness of savage life. If it stood in Hyde Park, or the Garden of the Tuileries, it would form a new order, I do not say equalling, but not unworthy to stand side by side with the remains of Egyptian, Grecian, and Roman art." It is untrue to say of such a people, though they have left no name behind them: "They died, and made no sign!"[1] May we not rather exclaim, with Ruskin, "How cold is all history, how lifeless all imagery, compared to that which the living nation writes, and the uncorrupted marble bears! How many pages of doubtful record might we not often spare, for a few stones left one upon another!"[2]

There is historical evidence that some of the ruined cities were in occupation at the era of the Conquest, but the proof is no less conclusive that others were already abandoned ruins; and any inference therefore as to the modern date of the architecture already described is as fallacious as that which should assign the Colosseum to the builders of St. Peter's, because the modern Roman still vegetates under the shadow of both. The civilisation of Central America grew up on the soil where its memorials are still found, with as few traces of Asiatic as of European or African influences affecting it at any stage in its progress. It was, moreover, the growth of many generations, and is seen by us at a stage far removed from that in which it had its beginning. A national taste and style had been matured, so that we find a certain uniformity pervading the widely-scattered monuments of its intellectual development. But it had prevailed until the cultured artist had learned to work with freedom amid its prescriptive forms; and it exhibits an exuberance of inventive fancy, akin to that of Europe's thirteenth and fourteenth centuries, rather than any archaic stiffness like that which marks the earliest Romanesque as it emerges from the slavish control of debased classic forms.

It is not therefore amid the long maturing civilisation of Central America and Yucatan that we can hope to recover the germs from whence it sprung; nor, though we find the Aztec architecture of an inferior character, are we, on that account, to trace in it the evidence of a less matured stage. Its character seems rather to confirm the traditions of an intruding race by whom the refined arts of the

[1] Prescott's *Conquest of Mexico*, B. v. ch. iv.
[2] *Seven Lamps of Architecture*, p. 164.

Toltecs were arrested in their progressive expansion, or partially borrowed and debased in their adaptation to the barbarous rites of the conquerors. But the architectural remains, as well as other traces of art and skill of another remarkable people, embody records of an indigenous civilisation no less interesting than any which we have been glancing at.

The ancient empires of Peru and Mexico are indissolubly associated, on the page of history, in the melancholy community of suffering and extinction. Yet, while alike exhibiting extensive dominions under the control of a matured system of social polity, and vitalized by many indications of progress in the arts of civilisation: they present, in nearly every characteristic detail, elements of contrast rather than of comparison. Between the fifteenth and seventeenth degree south, the Andes rise to a height varying from twenty-four to upwards of twenty-five thousand feet, from whence as they sweep northward across the tropical line, they gradually subside into a line of hills as they enter the Isthmus of Panama. Sheltered amid the lofty regions that rise step by step on their steep sides, a gentle and industrious population found within the tropics all the effects of varying latitude in relative elevation; while the narrow strip of coast land, rarely exceeding twenty leagues in width, gave them command of the burning regions of the palm and the cocoa-tree, fanned by the breezes of the Pacific. Such a country, under the gradual development of a progressive civilisation, would have seemed fitted only for detached and independent states, or a federation resembling in some degree that of the cantons of the Swiss Alps. But the most remarkable and enduring monuments of the civilisation of the Incas are their great military roads, fortresses, post-stations, aqueducts, and other public works: by means of which a coherent unity was maintained throughout dominions broken up by mountain ravines, narrow ocean-bounded lowlands watered under a tropical sun only by a few scanty streams, and pathless sierras elevated into the regions of eternal snow. The Spanish conquerors, with all their boasted superiority, allowed the highways of the Incas to fall into ruin; yet, even after the lapse of three centuries, Humboldt recorded as his impression, on surveying one of them in its decay: "The great road of the Incas is one of the most useful, and at the same time one of the most gigantic works ever executed by man."[1]

Peruvian architecture betrays abundant evidence of the same

[1] *Vues des Cordillères*, p. 294.

all-pervading centralization which gave law to the institutions and arts of that singular people. Its masonry was for the most part as solid and ponderous as it was simple, notwithstanding the lavish munificence of the sovereigns, and the revenues of the sacerdotal order, which were expended in decorating the great temple at Cuzco, and other favoured sanctuaries, with gold and jewels. In general, the walls were built of huge blocks of stone, or when of bricks, these were of large dimensions and an enduring composition which has well withstood the action of time. But the elevation was low, the doorways were the chief apertures for light; and instead of the substantial approximation to the arch, which confers durability as well as elevation on the ruined cities of Central America, the roof appears to have been of wood, thatched with straw or covered with an imperfect concrete of earth and pebbles. "It is impossible," says Humboldt, "to examine attentively one edifice of the time of the Incas, without recognising the same type in all the others which cover the slopes of the Andes."[1] Simplicity, symmetry, and solidity, he adds, are the three features which constitute the distinguishing characteristics of all. The masonry is frequently polygonal, with the surfaces unhewn, except at the edges, where it has been fitted with the nicest care.

The Peruvian builder appears to have wrought from choice with immense masses of stone; and though columns, bas-reliefs, and other external ornaments are rare, there are not wanting examples of elaborate sculpture in a style admitting of comparison with those of Central America. D'Orbigny gives an engraving of one doorway hewn out of a single mass of stone, and decorated with sculptures in low relief, arranged in a series strikingly suggestive of ideographic symbolism. It forms the entrance to a ruined temple at Tiaguanaco, in the Aymara country, which surrounds Lake Titicaca, with its mysterious architectural remains, assigned by the Peruvians themselves to an older date than the traditional advent of the Incas.[2] Dr. Tschudi has illustrated and described some of the most remarkable specimens of cyclopean remains. In some of these, as in the House of the Virgins of the Sun, at Cuzco, the huge masses of masonry are of so striking a character as to have become objects of common wonder. One of these, prominent among the polygonal blocks ingeniously dovetailed into each other, alike from its size and complicated figure, is popularly styled the

[1] *Vues des Cordillères*, p. 197.
[2] D'Orbigny's *L'Homme Américain*, plate 10.

stone of the twelve corners. Spanish authors describe a fillet or cornice of gold, a span and a half in width, which ran round the exterior and was embedded in the masonry; while, both externally and internally, it blazed with barbaric gems and gold, and was hung with costly hangings of brilliant hues. Now its remains furnish the foundation for a convent of the Dominican friars, and only attract notice by the solid masonry, constructed on a scale well calculated to suggest anew the art of the fabled Cyclops, to account for their massive and enduring strength.

Mr. J. H. Blake, to whose Peruvian researches I have already been indebted for interesting illustrations of ancient arts and customs, has favoured me with his notes on this department, in which his training and skill as a civil engineer render him peculiarly qualified to judge. "On the desert of Atacama, near the base of the Andes, in lat. 23° 40′ s., the walls of nearly all the buildings of an ancient town remain, remarkable for the peculiarity of the situation, admirably adapting it for defence. It lies on the face of a hill. On the one side is a natural ravine, and on the other an artificial one, intersecting each other at the summit of the hill, thus rendering it impregnable on all sides but one. This side presents an inclined plane in the form of an acute triangle, across which, extending from side to side, from the base to the summit, are rows of buildings, each succeeding row being shorter than the one below it, till at the top sufficient space is left only for a single building which overlooks all the others. These buildings are all small, and nearly of uniform size, each consisting of a single apartment. The walls are constructed of irregular blocks of granite cemented together, and the front walls are all pierced with loop-holes, both near the floor and about five feet above. The floors are of cement, and are on a level with the top of the wall of the building in front. Each building is provided with a large earthen jar, sunk below the floor, capable of holding from thirty to forty gallons. These were probably used for storing water. A short distance from this old town is a small fertile valley, watered by streams from the Andes, while the rest of the country for many leagues round is entirely destitute of vegetation." Such, it is obvious, can only illustrate the ruder arts and domestic habits of a settlement in an exposed situation remote from the centres of highest Peruvian civilisation. But the most enduring memorials of Inca sovereignty are those associated with the construction and maintenance of the public roads, post-houses, and telegraphic corps, by means of which

a coherent unity was preserved throughout the vast empire. Of the great artificial roads, Mr. Blake notes, that which leads from Quito to Cuzco, and thence southward over the valley of the Desaguadero, is the most extensive. It is constructed of enormous masses of porphyry, and is still perfect in many parts. Where rapid streams were encountered, suspension bridges were constructed by means of ropes formed of fibres of the maguey. Some of these bridges exceeded two hundred feet in length, and so well did this kind of bridge answer the purpose for which it was designed, that it was adopted by the Spaniards, and to this day affords the only means of crossing many rivers both in Peru and Chili. The remains of one of these great roads are still to be seen in the most barren and uninhabitable part of the desert of Atacama, as also the *tambos*, or houses for rest, erected at intervals throughout the whole length for the accommodation of the Inca and his suite. Numerous canals and subterranean aqueducts were formed to conduct the waters of lakes and rivers for irrigating the soil. Some of these have been preserved, and are still used by the Spaniards. One in the district of Condesuyer, of great magnitude, is more than four hundred miles in length; but those great works, like the roads, were not confined to the more fertile parts of the country. In the southern part of Peru, and in the midst of the desert, extensive and numerous tunnels were excavated horizontally in sandstone rock, through which the water still runs, and is conducted into reservoirs from whence it is taken to the various gardens of Pica: producing in this arid and desert land one spot which in the luxuriousness of its vegetation, is rarely found surpassed in places the most favourably situated for cultivation.

A diversity of construction is apparent in the aqueducts and other erections, indicating an intelligent skill in adapting the resources of the locality to the exigencies of the works. Some of the aqueducts, such as that in the valley of Nasea, are built of large blocks of masonry; while others, like the one which conveyed the waters of the spring of Amiloe to the city of Tenochitlan, are formed of earthen pipes. But such works also illustrate the skill of very different eras; and while they survive to shame the scepticism of modern critics as to the marvellous native civilisation of Peru, some of them recall centuries to which the Peruvians themselves looked back, in the days of the Incas, as an ancient and half-forgotten past. On the shores of Lake Titicaca, extensive ruins still remain, which are believed to have been in the same condition at

the date of the Conquest, and to have furnished the models of that architecture with which the Incas covered their wide domains.

Untrustworthy as much of the Mexican chronology is, the mode of recording events gave some definite hold on the chronicles of the nation; whereas the system of Peruvian quipus could have transmitted records, at the most, only to a few generations; and renders valueless the pretended history of the dynasty of Manco Capac. In the megalithic character of Peruvian architecture, however, the elements of a self-originated art are strikingly apparent. It is one of the most characteristic features pertaining to the progress of human thought in the earliest stages of constructive skill. There seems to be an epoch in the history of man, when what may be styled the megalithic era develops itself under the utmost variety of circumstances. In Egypt, it was carried out with peculiar refinement by a people whose mastery of sculpture and the decorative arts, proves that it had its origin in a far deeper source than the mere barbarous love of vast and imposing masses. In Assyria, India, Persia, and throughout the Asiatic continent, this taste appears to have manifested itself among many widely severed races; and in northern Europe its enduring memorials are seen in such rudely massive structures as Carnac and Stonehenge. The same mental condition finds expression in the pyramidal terraces and vast façades of Central America and Yucatan, and is more fully present in the massive solidity of Peruvian masonry. It is the unconscious effort to express abstract power, which triumphs in such barbaric evidence of difficulties overcome; and although it scarcely aims at the beautiful, it excites a sense of sublimity from the very embodiment of that power by which it was achieved.

In this respect the ancient architectural remains of the southern continent have a higher ethnological value than those of Mexico, Central America, or Yucatan. They reveal the only truly primitive achitecture of the New World; and, therefore, suggest a possible centre from whence that intellectual impulse went forth, pervading with its elevating influences the nations first discovered by the European adventurers of the sixteenth century on the mainland of America; although at that date the distinct centres of Mexican and Peruvian arts were in operation wholly independent of each other, and the two had moved in opposite directions, unconscious of rivalry in the development of a native civilisation.

CHAPTER XVII.

CERAMIC ART.

ART TRACES OF DOMESTIC LIFE—HISTORICAL VALUE OF POTTERY—MODELLING AND GRAVING TOOLS—CHINOOK WOVEN VESSELS—ANCIENT PERUVIAN BASKET-VESSEL—POTTERY OF THE GULF—CERAMIC ART OF THE MOUND-BUILDERS—PECULIAR ORNAMENTATION—USE OF THE POTTER'S WHEEL—AMERICAN ARCHÆOLOGY—MEXICAN ANTIQUITIES—ART COMMON TO TWO HEMISPHERES—THE AMERICAN FRETTE—THE MODELLER'S ART—MEXICAN TERRA-COTTAS—COMIC CLAY MASKS—POTTERY OF CENTRAL AMERICA—CHIRIQUI EARTHENWARE—PORCELAIN MUSICAL INSTRUMENTS—PERUVIAN MENTAL CHARACTERISTICS—POTTERY OF PERU—ACOUSTIC VESSELS—ANALOGIES TO EUROPEAN DEVICES—FICTILE PORTRAITURE—PORTRAIT-VASES—GROTESQUE AND HUMOROUS DESIGNS—ILLUSTRATIONS OF NATIVE CIVILISATION—CONTRAST OF NORTHERN AND SOUTHERN ART.

THE imposing national character of architectural remains claims for them a prominent place among the materials of archæological history; but the real progress of a people is recorded with more graphic minuteness, where the traces of taste and skill are found in combination with the appliances of daily life. Among such historic materials the products of ceramic art merit on many accounts a foremost place. The plasticity of the potter's clay, which furnishes so many bold metaphors of the Hebrew scriptures, renders it readily susceptible of every varying phase of national taste, so that minute traits of ethnical diversity find expression in the forms which the clay receives at his hand. It was wrought and burnt by the fathers of the ancient world where still some of the most remarkable chronicles of early Asiatic civilisation are recovered, including cuneatic bricks and cylinders, eloquent with a definite written history. Egypt, too, had her wrought clay and pottery of diverse forms: in working which the Egyptian taskmasters made the lives of their Hebrew serfs bitter with hard bondage, in mortar and in brick. These sun-dried bricks, which in the humid climates of temperate zones would perish in a few seasons, survive amid the

sculptured granite and limestones of ancient Egypt, with the still decipherable stamps of their makers, or the cartouche of a Rameses or Thothmes, unmistakably chronicling their antiquity. The Arabian conquerors who impressed new phases of art on the historical products of the Nile valley, carried with them into Spain the Egyptian fashion of building with sun-dried clay; and the term *adobe*, by which the Spanish American now designates the clay-built structures of the New World, is the Arabic *cob* introduced into Spain by its African conquerors in the eighth century. But the simple art of building with sun-baked bricks was practised both in Mexico and Peru long before the Spaniard followed there the borrowed arts of the Saracen; and in no region of the world has the ingenuity of the potter been more curiously tasked than on the sites of ancient Peruvian civilisation.

Few traces of antique art have proved more serviceable to the historian and ethnologist than those of the potter's handiwork. The graceful contour of the rudest Hellenic vase reflects the national genius that evoked the sculptures of the Parthenon; and reveals also, at times, the sensuous refinement that wrought its overthrow. The coarser, but more practical intellect of Rome gives character to her fictile ware; and the pottery, both of ancient and modern nations, reflects, as in a mirror, their salient mental characteristics. For it is an art which, while it admits of all the perfection of form that a Phidias could impart, and all the exquisite beauty of adornment which a Raphael could design, is nevertheless allied to the homely duties and necessities of daily life. It does not therefore reflect the mere exceptional refinements of luxury, but also retains the impress of that prevailing standard of taste which suffices to satisfy the common mind. Hence the value of pottery as a material of history. Even its scattered fragments chronicle decipherable records; while from the more perfectly treasured sepulchral pottery, we recover minute traces of the manners and customs of long extinct nations, and trace the geographical limits of their conquests or their commerce, within well-defined periods of their history. Numismatic evidence is scarcely more definite, and much less comprehensive. The progress of Egypt and the many changes it has undergone through the long ages of its history, find striking illustrations in the pottery and porcelain accumulated on its historic sites. Grecian colonization, and its æsthetic influences, are traced along the shores of the Mediterranean and the Euxine, by its beautiful fictile ware and sepulchral pottery. Etruria's history is written to a great extent in the same fragile, yet enduring characters. The footprints

of the Roman conqueror are clearly defined to the utmost limits of imperial dominion by the like evidence; and sepulchral pottery is frequently the only conclusive evidence which enables the European ethnologist to discriminate between the grave of the intruding conqueror and that of the aboriginal occupant of the soil. Apart, therefore, from the exquisite beauty of many remains of fictile art, which confers on them a high intrinsic value, the works of the potter have been minutely studied by the archæologist, and are constantly referred to as historical evidence of the geographical limits of ancient empires. But nowhere has incipient civilisation given more distinctive characteristics to fictile art than in the New World. Tried by this test of æsthetic development, the unity of the American as a distinct race disappears as unequivocally as when fairly subjected to that of cranial formation, from which such supposed homogeneous characteristics have been chiefly deduced. The northern region, lying around and immediately to the south of the great lakes, has its peculiar fictile ware; the Southern States, bounded by the Gulf of Florida, have their characteristic pottery and terra-cottas; the ancient mounds of the Mississippi Valley disclose other and diverse types of ceramic art; while Mexico, Central America, Brazil, Chili, and Peru abound in wondrously varied memorials of skill and exuberant fancy wrought from the potter's clay.

The most common form of the pottery made by the Northern Indians is that of the gourd, with ears, or holes perforated at the rim, for suspending the vessel over the fire. Considerable ingenuity also appears to have been expended by some of them in modelling clay-pipes, decorated with incised patterns, or wrought into fanciful shapes and forms of animals. Fragments of pottery are turned up by the plough on the sites of old Indian villages throughout most of the Northern States, and in Canada; and in the incised patterns rudely wrought on them, a curious correspondence is apparent to the simple linear devices on the sepulchral pottery of primæval Europe. The implements of pointed bone with which those were executed on the soft clay, are of common occurrence; and the better finished tools of the Mound-Builders have also been recovered. They are made of the bones of the deer and elk; some flat and chisel-shaped, others with round, curved, and tapering points; but all, notwithstanding their great decay, showing traces of careful workmanship in their forms and polished surfaces. Beside them are also found the copper chisels and gravers, indicating, with the former, more delicate and artistic uses in fictile ornamentation.

The manufacture of pottery appears to have been pursued among

the northern tribes of America, with little variation, during many generations; nor is it even now wholly superseded among their survivors by the more serviceable articles which the fur-trader supplies.[1] But this by no means destroys either the interest or the mystery attached to older relics. Man's capacity for progress under certain favourable circumstances is not less remarkable than his unprogressive vitality at many diverse stages of advancement: as shown in the forest Indian, the Arab, the Chinese; and in illustration of this we find Mr. Squier remarking of the pottery of southern areas of the American continent: "The ancient pottery of Nicaragua is always well burned, and often elaborately painted in brilliant and durable colour. The forms are generally very regular, but there is no evidence of the use of the potter's wheel; on the contrary, there is reason to believe that the ancient processes have undergone little or no modification since the Conquest."[2] But while we thus find the native arts uninfluenced by contact with the matured civilisation of Europe for upwards of three centuries; and discover ancient processes of the Mandan and Arikaree potters still practised by their descendants near the head waters of the Missouri: the evidence is no less distinct which proves that the art was limited to certain tribes. The transition in this respect is not a gradual one, like that which may be supposed to connect the whole fictile manufactures of the eastern tribes from the St. Lawrence to the Gulf of Florida. To the west of the Rocky Mountains the potter's art is superseded by manufactures and accompanying customs of a totally different kind.

The Chinooks, for example, inhabiting the tract of country at the mouth of the Columbia river, carve bowls and spoons of horn, highly creditable to their ingenuity and decorative skill; but their cooking-vessels are baskets made of roots and grass woven so closely as to serve all the purposes of a pitcher. The frontispiece represents Caw-we-litcks, one of the Cowlitz Flatheads, plaiting a waterproof basket; while her child lies beside her, on its cradle-board, undergoing the process of cranial deformation. Similar vessels are in use among the Indians of the Pacific coast as far south as Lower California, wrought in black and white grasses, in ornamental patterns, or with representations of men and animals, in black, on a white ground. Still farther south they are made by the Pah-Utah Indians, near the thirty-fifth parallel, in New Mexico,

[1] Vide Catlin's *Manners and Customs of the North American Indians*, Letter 16; and Dr. F. V. Hayden's *Contributions to the Ethnography and Philology of the Indian Tribes of the Missouri Valley*, p. 355.

[2] Squier's *Nicaragua*, vol. ii. pp. 337, 338.

of slips of coloured reed, and are described as exhibiting considerable taste as well as skill.[1]

In this curious application of a rude ingenuity, we find the perpetuation of arts anciently practised in the seats of civilisation of the southern continent. Among a variety of objects obtained by the United States Astronomical Expedition to the Southern Hemisphere, was a closely woven basket found in a Peruvian tomb, along with pottery and numerous other relics; but described as "used for holding liquids, and which it would still retain."[2] Many similar indications suffice to show that the influence of social progress in Mexico and Central America, if not also in Peru, extended partially among the tribes to the west of the Rocky Mountains even into high northern latitudes; while it was inoperative throughout the vast areas drained by the Mississippi and its tributaries, during any period of their occupation by the Red Indian tribes.

The substitution of wicker or straw-work for pottery, cannot, however, be assumed as any evidence of progress; though it is better suited to the wandering life of forest tribes than the fragile ware which ministers so largely to the convenience of settled communities. The mode of using such cooking-vessels is as simple as it is ingenious. The salmon, which constitutes the principal food of the Chinooks along the Columbia River, is placed in a straw-basket filled with water. Into this red-hot stones are dropped until the water boils, and the fish is dressed as expeditiously as if boiled in an ordinary kettle over the fire. But though such baskets and cooking vessels possess obvious advantages to migratory tribes, they are confined to those on the Pacific coasts; and the causes of a difference so obvious must be sought for in other sources, pointing to essential distinctions in arts as well as in customs, between the flat-head tribes of California and Oregon, and the nomade potters to the east of the Rocky Mountains.

Alike in the Old World and the New, the seats of highest civilisation, and of most progressive enterprise, are now found within the temperate zones. But it was not so with either of them in ancient times. The civilisation of Northern Europe is of very recent growth; and we look in vain along the region of the great lakes of the American continent, or in its wide North-west, for proofs of any more advanced arts than those of the miners who first

[1] *Explorations and Surveys of Route for a Railway from the Mississippi to the Pacific Ocean, in* 1853-54, vol. iii. "The Indian Tribes," p. 51, plate 41, figs. 14, 15, 16.

[2] *United States Astronomical Expedition*, vol. ii. Append. E. p. 117.

explored the copper regions of Lake Superior. It requires some considerable progress in civilisation to enable the hardy native of northern climates so to cope with their inclement seasons, as to command a residue of time for other than works of vital necessity; while in the south nature spontaneously gratifies so many wants, that the leisure required for the development of ornamental art and ingenious refinements of taste is at the command of the first gifted race that enters into possession of its abundant supplies. When, however, the hardier sons of the north win for themselves by toil and self-denying perseverance the same leisure, they develop a capacity for higher social achievements than all the luxurious civilisation of tropical climates. But such was not the destined fortune of the aboriginal tribes of the New World. Whether under more favourable circumstances the intelligent Micmacs of New Brunswick, or the sagacious and politic Iroquois along the southern shores of Ontario and the St. Lawrence, would have won for the New World an enduring civilisation of its own, can only now be subject for conjecture. They had within them, unquestionably, the elements with which to contend against all the obstacles that climate or locality opposed to their progress; but they were too far behind in the march of civilisation to hold their ground in the critical transitional stage, when brought into direct contact with intruders armed with the accumulated momentum of Europe's full maturity.

We find, accordingly, as we turn towards the south, that the pottery wrought by the tribes on the Gulf of Florida exhibits greater skill than can be traced in the best products of native kilns on the upper waters of the Mississippi, or along the shores of the Canadian lakes. Much care appears to have been exercised in preparing the clay to resist the action of fire, by mingling it with finely pounded quartz and shells. The shapes of vessels are also more fanciful, and both in workmanship and style of ornament they manifest a decided superiority. Many of these vessels were made of large size, and in constructing them a sort of mould of basket-work appears to have been sometimes used, which perished in the kiln, leaving the burnt clay impressed with ornamental patterns wrought in the osier frame. The smaller vessels were moulded over gourds and other natural objects, and frequently decorated with graceful patterns wrought in relief, or painted. Nevertheless, between such products of southern and northern kilns, there is not any more essential difference than that which a slight progress in civilisation, added to the greater leisure consequent on a more genial climate and

productive soil, would educe; and their chief value for us consists in the proofs they afford of a capacity for manufacturing and artistic progress inherent in the Red Indian.

Of the ceramic art of the Mound-Builders we possess as yet very limited knowledge. Unlike the durable sculptures in porphyry and limestone rescued from the ashes on their altar-hearths, the fragile pottery, though even less susceptible of the action of fire, is recovered with difficulty, even from the mounds in which it may have lain entire through unnumbered ages, until the invading axe or spade which brought it to light involved its destruction. But a sufficient number of examples have been obtained to prove their superiority in workmanship, and essential diversity in character and style of ornament from any known products of Indian manufacture. In exploring the remarkable group of sacrificial mounds on the banks of the Scioto river, called "Mound City," two were opened containing considerable remains of pottery, though unfortunately only a few nearly perfect vessels could be reconstructed out of the fragments. The largest of these deposits contained pieces enough to have composed about a dozen vessels, from which two vases were restored; and alongside of them lay two chisels or graving tools of copper, a number of tubes of the same metal, an arrow-head of obsidian, and numerous spear-heads skilfully chipped out of quartz and manganese garnet. But the whole deposit was closely intermixed with charcoal and ashes, and had been subjected to a strong heat, which had broken up or changed every object liable to be affected by the action of fire. The ornamental devices on the specimens of mound pottery thus recovered are wrought by the hand with modelling tools on the soft clay, the design being thrown into relief by sinking the surrounding surface and working it into a different texture. The figures are executed in a free, bold style; and where the same device is repeated, sufficient variations are traceable to show that the artist modelled each design separately, guided by the eye and the experienced hand. Their discoverers conceive that, from the delicacy of some of the specimens recovered, and the amount of labour expended on them, they were designed for use in the sacred rites of the ancient priesthood. Others of a coarser texture may have been culinary vessels made with a special view to their capability of withstanding fire. The really important feature, however, is that both differ essentially, alike in design and workmanship, from any known class of Indian pottery. In his latest publication on the subject, Mr. Squier

remarks: "In the manufacture of pottery, the Mound-Builders attained a considerable proficiency. Many of the vases recovered from the mounds display, in respect to material, finish, and model, a marked superiority to anything of which the existing Indian tribes are known to have been capable, and compare favourably with the best Peruvian specimens. Though of great symmetry of proportions, there is no good reason to believe that they were turned on a lathe. Their fine finish seems to have been the result of the same process with that adopted by the Peruvians in their manufactures. Some of them are tastefully ornamented with scrolls, figures of birds and other devices, which are engraved in the surface, instead of being embossed upon it. The lines appear to have been cut with some sharp, gouge-shaped instrument, which entirely removed the detached material, leaving no ragged or raised edges. Nothing can exceed the regularity and precision with which the ornaments are executed."[1]

The largest specimen of the mound pottery hitherto recovered was found in fragments on one of the altars, along with a few shell and pearl beads, convex copper disks, and a large deposit of fine ashes unmixed with charcoal. But besides these, a more precious sacrifice had been made: unless, contrary to all analogies in mounds of this class, it is supposed to be sepulchral instead of sacrificial. A layer of silvery mica sheets, overlapping each other, covered the entire basin of the altar; and immediately over this lay a heap of burnt human bones, apparently sufficient to have formed a single skeleton: repeating the suggestion which other evidence supplies, that the artistic skill of the Mound-Builders may not have been incompatible with the hideous rites of human sacrifice.

It has been generally assumed that the ancient and widely-diffused lathe or wheel of the potter remained totally unknown to the most civilized nations of the New World; and Mr. Squier has expressed his opinion very decidedly against the knowledge of it by the ingenious Mound-Builders. It may be doubted, however, if we are yet in possession of a sufficient number of specimens of their fictile ware to determine this question. The example referred to is highly polished, and finished both within and without with a uniformity of thickness, not exceeding one-sixth of an inch, and with a smoothness of surface equalling the most perfect productions of the modern kiln. "Its finish resembles in all respects that of the finer Peruvian pottery, and when held in certain positions

[1] *Ancient Monuments in the United States: Harper's Magazine*, vol. xxi. p. 175.

towards the light, exhibits the same peculiarities of surface as if it had been carefully shaved and smoothed with a sharp knife." We must not, indeed, confound with the idea of the ancient potter's use of some process for giving a revolving motion to the mass of clay, while modelling it with his simple tools, his mastery of all the latest refinements of the wheel and the lathe. But the characteristics of the few specimens of mound-pottery already found, if confirmed by further discoveries, would go far to prove that he had devised for himself some mechanical appliance involving the most essential elements of the potter's wheel; and indeed, notwithstanding the opinion more recently expressed by Mr. Squier in his *Ancient Monuments of the United States*, something nearly equivalent to the view now suggested has already been admitted in the joint production of Dr. Davis and himself, where it is remarked: "It is not impossible, but on the contrary appears extremely probable, from a close inspection of the mound pottery, that the ancient people possessed the simple approximation towards the potter's wheel, consisting of a stick of wood grasped in the hand by the middle, and turned round inside a wall of clay formed by the other hand, or by another workman." A few curious terra-cottas from the mounds add further illustrations of the progress achieved by that singular people in different branches of ceramic art. But such examples have not yet been met with in sufficient numbers to admit of any proper comparison with relics of the same class found in such quantities on ancient Mexican sites.

Thus far, then, we perceive that throughout the vast region of the New World, lying between the Atlantic sea-board and the Rocky Mountains, and bounded north and southward by the great lakes and the Gulf of Florida, certain common characteristics pertain to the fictile ware of the aboriginal tribes during the period subsequent to European discovery. Among the southern tribes, indeed, the potter's art was brought to greater perfection, and an ingenious fancy was employed in diversifying its forms and multiplying its decorations; so that curious specimens of their workmanship are found, bearing little resemblance to the common fictile ware of the northern and western Indians. Adair says of the Choctaws and Natchez, that "they made a prodigious number of vessels of pottery, of such variety of forms as would be tedious to describe, and impossible to name;" and De Soto refers to the fine earthenware of the latter tribe as little inferior to that of Portugal. Nevertheless, the prevailing forms of the Choctaw and

Natchez pottery present unmistakable affinities to that of the North, and the same may be affirmed of the fine-painted vessels of the Zuñians of New Mexico.

But it is not so with the fictile ware recovered from the mounds of the Scioto Valley. In the very centre of the vast area, which thus appears to have been occupied throughout all known centuries by homogeneous tribes, corresponding in many customs and simple arts, we find the traces of a people of unknown antiquity, essentially differing from all the modern occupants of the Mississippi Valley. Though very partially advanced in civilisation, they have left evidences of skill and acquired knowledge greatly in advance of any possessed by the forest tribes; and we must turn to the seats of native American civilisation for a parallel to those strange, extinct communities, that reared their lofty memorial mounds on the river terraces of the Ohio, and wrought their mysterious geometric problems in the gigantic earthworks of High Bank and Newark.

The materials for illustrating the intellectual characteristics of the civilized nations of America, have as yet been gathered only in the most partial and insufficient manner. The celebrated Mexican collection of Mr. William Bullock would have gone far towards the completion of one important section of the requisite historical illustrations; but after being exhibited both in America and Europe, it was allowed to be dispersed and lost. The valuable materials recovered by the joint labours of Stephens and Catherwood from the sites of a more matured civilisation in Central America, perished by a worse fate even than the auctioneer's hammer; and no collections furnish adequate means of studying the mental development of the civilized or semi-civilized nations of the New World by means of their artistic productions. Yet, next to language, and its written evidences, what proof can equal in trustworthiness or value, that which exhibits the intellectual capacity, and degree of refinement and taste of extinct generations, as expressed in sculptured, plastic, or pictorial art? But though the materials within our reach are inadequate for fully mastering the details of inquiries thus comprehensive and important, they are nevertheless sufficient to furnish some exceedingly valuable data. In the British Museum, a collection of Mexican and Peruvian pottery, statuettes, and reliefs in terra-cotta, supplies interesting examples of the indigenous ante-Columbian art of America; and one of the halls of the Louvre contains a valuable cabinet of

American antiquities. The Society of Antiquaries of Scotland has also a small collection, including specimens of the miniature terra-cottas of Mexico, so interesting from the illustrations they afford, both to the historian and the ethnologist, of the costume and features of the ancient people by whom those ingenious works of art were modelled. From the latter collection the Egyptian-look-

FIG. 32.—Mexican Terra-Cotta.

ing head figured here, is selected as an illustration of one of the most common head-dresses, as well as of the peculiar features perpetuated in those terra-cottas, so little resembling the modern Mexicans or American Indians. One important collection, chiefly of Mexican antiquities, formed by the zeal and liberality of two individuals, is now preserved in the rooms of the American Philosophical Society at Philadelphia. It contains nearly two thousand objects, including numerous terra-cottas, specimens of pottery, and works wrought in stone and metal. These objects were collected by the Hon. J. Poinsett during a diplomatic residence of five years in Mexico, and by Mr. W. H. Keating; and were variously obtained within the area of the ancient city of Mexico, on the plains near the pyramids of St. Juan Teotihuacan, Cholula, and Tezcuco, the Island of Sacrificios, and from the western side of the Sierra Madre of the Cordilleras.[1] It is impossible, indeed, to examine this interesting collection with any minuteness, without being convinced that it includes the artistic productions of diverse races, and probably of widely different periods. A few specimens, indeed, are unquestionably of Peruvian origin. Others correspond to the peculiar art of Central America, as distinguished from that of Mexico. But, it is probable that this distinction is one of periods rather than of locality: the arts of Central America having also been common to the Mexican plateau in that period to which so many

[1] *Transactions of the American Philosophical Society, N.S.*, vol. iii. p. 510.

of its traditions seem to point, when a higher native civilisation flourished there prior to the intrusion of the Aztecs. A Mexican skull of large and massive proportions, with a full, broad, but retreating forehead, and a predominance in the longitudinal diameter, conflicting with the assigned proportions of the typical American cranium, is engraved in Dr. Morton's *Crania Americana*, plate xvi. He remarks of it: "This is a relic of the genuine Toltecan stock, having been exhumed from an ancient cemetery at Cerro de Quesilas, near the city of Mexico, by the Hon. J. R. Poinsett, and by him presented to the Academy of Natural Sciences of Philadelphia. It was accompanied by numerous antique vessels, weapons, etc., indicating a person of distinction." This no doubt affords a clue to one of the localities from whence the Mexican antiquities were recovered; and probably points to some of those which, from their correspondence to the higher art of America, suggested the

FIG. 33.—Mexican Frette.

idea of a Toltecan origin. To the same period of earlier and purer art, should probably be ascribed a fragment of bright red pottery (Fig. 33), wrought with one of the most familiar varieties of the classic frette; and which, if found on any European site among fragments of Samian ware, would be unhesitatingly assigned to a Roman origin. Such, however, is no solitary example of the repetition of classic and other ancient patterns, in the ornamentation employed by the native artists of ante-Columbian America. Alike in the works of the Peruvian modeller and sculptor, we find evidences of their independent adoption of ornaments familiar to the artists of Etruria, Greece, and Rome, while the disciples of Plato were still speculating on the lost Atlantis of the world's engirdling ocean. To the ethnologist, this independent evolution of the like forms and devices among nations separated equally by time and space, is replete with an interest of a far

higher kind than any that could result from tracing them to some assumed intercourse between such diverse nations. They are evidences of an intellectual unity, far more important in its comprehensive bearings than anything that could result from assumed Phœnician, Hellenic, or Scandinavian migrations to the New World. But while such is the conclusion forced on the mind when required to account for these recurring coincidences, it is otherwise when we find the ornamentation of Peruvian pottery reproduced as a prominent feature in the architectural decorations of Central America and Yucatan. The same argument might indeed satisfy the mind in reference to the frette ornament, wrought in its simplest ancient form, but on a gigantic scale, as the principal decoration of the

FIG. 34.—Black Pottery, Berue.

beautifully proportioned gateway of Labnà, or on the Casa del Gobernador at Uxmal; but there is a variety of frette peculiar to the ceramic art of Peru, and the sculptured decorations of Yucatan, the correspondence of which is at least worthy of note. It is shown on one of the specimens of black Peruvian pottery brought from Berue (Fig. 34), with a monkey as the peculiar feature of the vessel, where a step-like form occurs in the first line of the frette. The same ornament plays a prominent part in the ruins of Mitla,[1] and again appears in Mr. Catherwood's drawings of the fine doorway at Chunhuhu, where it is introduced on a scale that specially

[1] Brantz Meyer's *Mexican History and Archæology*, plate ii.

attracted the notice of Mr. Stephens, from the bold and striking aspect of the details.

The plastic art is valuable, alike on account of the facility with which it reproduces the costly decorations of the sculptor; and from its perpetuation of many minute indices of style and mode of thought which lie entirely beyond the compass of architecture, in its ambitious adaptations to the sanctities of religion or the majesty of the state. To those who have watched a skilful modeller tracing his ideas almost as rapidly in the plastic clay as when sketching with the pencil, it is scarcely necessary to recall with what seeming ease thought is directly translated into expressive form. All the difficulties of perspective, colour, and light and shade, which perplex the inexperienced draughtsman, are unconsciously solved in the first process; and to this, no doubt, is due the precedence which the sculptor's art takes of all others. Among the Mexicans, modelling in clay appears to have been extensively practised: and numerous terra-cotta idols, statuettes, models of animals and other objects, recovered from the ancient canals of Mexico, may be ascribed, with little hesitation, to the period of the Conquest. Considerable freedom is manifest in the modelling, but as works of art they claim no high rank; and in the contrast they present to the best fictile art and sculpture of Central America and Peru, they may be accepted as the truest exponents of the inferior civilisation assigned both by tradition and history to the Aztec conquerors of older nations of the Mexican plateau.

But the modeller's art becomes most valuable to the historian and ethnologist, when it furnishes representations of the human face and figure. In the vicinity of some of the ancient teocallis, and on other sacred sites, small terra-cottas, chiefly representing heads of men and animals, abound. Collections of such brought from Mexico, and preserved in various public museums, as in that of the American Philosophical Society at Philadelphia, where they number about one thousand, illustrate artificial malformations of the human head, national features, and a great variety of head-dresses and ornaments for the hair. Dr. E. H. Davis, of New York, has in his collection a small Mexican terra-cotta, exhibiting the head under the process of compression, nearly in the same manner as is still practised by tribes of the North-west. But besides such small terra-cottas, which would require a volume devoted specially to them, fully to illustrate their interesting details, the collections of the American Philosophical Society include a

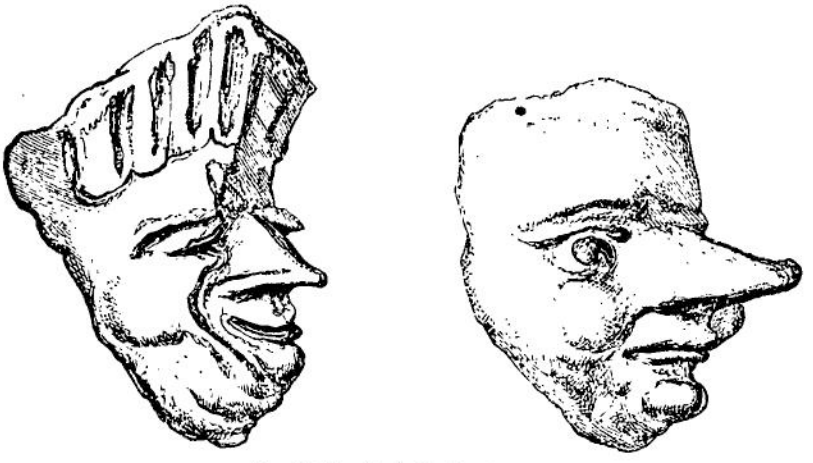
series of large clay masks of the human face, twenty-eight in all, and varying in dimensions from about half-life size to somewhat larger than life. These are executed with great freedom and very considerable artistic skill, and are in a totally different style from the inferior Mexican terra-cottas already referred to. They exhibit great variety of expression; and not only manifest a mastery of the details of individual portraiture, but include caricatures modelled with equal life and spirit.[1] Few objects of art could present features of higher interest to the ethnologist. Mr. Francis Pulszky, in his *Iconographic Researches*, when commenting on the art of American nations, remarks of his selected Mexican illustrations: "All of them are characterized by the peculiar features of the Central American group of the Red man in the formation of the skull, as well as by their high cheek bones."[2] But no such conclusion is suggested by the group of masks now referred to. The cheek bones are moderately developed, the nose is prominent and generally sharp, and a small mouth is accompanied in most cases by a narrow projecting chin. The example figured above (Fig. 35) illustrates the character of those large clay masks, or modellings of the human features, in which the ethnologist will look in vain for the Indian physiognomy. Nor are the caricatures less interesting or useful in this respect. When the English Wellington figured in the comic pages of the Paris *Charivari*, or the Emperor Napoleon III. receives the like honours from the caricaturists of the London *Punch*, the humour of the satiric pencil finds vent in exaggerations of the familiar natural features; and such is the tendency of all caricatures. But, as will be seen from specimens figured here (Figs. 36, 37), the ancient satirical modeller of the New World sported with features in no degree corresponding to the familiar type of the North American Indian. The varied forms of Mexican

FIG. 35.—Mexican Clay Mask.

[1] In the inventory printed in the American Philosophical Society's Transactions, they are described as "eighteen masks of pottery, representing the human face, of natural size, but very grotesque figures." In reality, however, I counted twenty-eight specimens, of which the larger number are valuable for their obviously truthful portraiture.

[2] *Indigenous Races of the Earth*, p. 183.

pottery more frequently exhibit an ingenious fertility of invention, and an exuberant fancy, than much æsthetic refinement. Indeed I cannot imagine the large human masks in the collection of the American Philosophical Society to be the work of the same people as the small terra-cottas beside them, which correspond in style to



FIGS. 36, 37.—Comic Mexican Masks.

the Mexican drawings, rendered familiar by Lord Kingsborough's great work. But in this department of the subject, as in some others, it would require a special monograph of ample dimensions to illustrate all the varied details.

Alike in Mexico, Central America, and Peru, it is obvious that the native artists worked with the utmost ease in the plastic clay; and hence they employed it for a variety of purposes, one of the most singular of which was that of making musical instruments. Several earthenware flutes, flageolets, and other wind instruments are included in the collection at Philadelphia, presenting a striking correspondence to a Babylonian pipe of baked clay preserved in the collection of the Royal Asiatic Society of London. It is in perfect condition; and produces its full compass of notes as clearly as it did upwards of two thousand years ago, when the musical arts of ancient Mexico were still practised on the banks of the Euphrates. Several curious specimens of the same novel class have recently been brought to light, along with a great variety of other interesting antiquities, in exploring the ancient graves of the province of Chiriqui, about fifty miles north of Panama. But between the Bay of Panama and Mexico lie the marvellous regions of Central

America, rich with colossal statues and temples adorned with sculptured façades and graven hieroglyphs, and also with their own characteristic ceramic art. Here also, as in other departments of our subject, we are as yet only on the threshold of disclosures which are destined to add many chapters to aboriginal American history. But enough has been noted to prove how entirely the arts of the Red Indian are left behind when we proceed to explore the sepulchral and other depositories of Yucatan, Chiapas, or Central America. Not only is the pottery of finer material, but alike in form and ornamentation it essentially differs from anything hitherto discovered to the north of the Rio Grande; and reveals the style of thought which finds more ample expression in the mighty ruins of the same regions. Among the illustrations of Mr. Stephens' *Travels in Central America*, one of the plates is devoted to pottery dug up by him in a mound among the ruins of Guezaltenango, in

FIG. 38.—Ticul Hieroglyphic Vase.

the ancient kingdom of Quiché. Of these the tripod illustrates a form of vessel found under considerable variations of detail, as far south as the Gulf of Panama, while its ornamentation presents considerable resemblance to patterns of constant occurrence on the pottery of Peru. But a far higher interest attaches to a specimen, dug up amid the ruins of Ticul, an aboriginal city of Yucatan. "The vase," says Mr. Stephens, "is of admirable workmanship, and realizes the account given by Herrera of the markets at the Mexican city of Tlascala. There were goldsmiths, feathermen, barbers, baths, and as good earthenware as in Spain." The chief device, it will be seen (Fig. 38), is a human bust, closely corresponding in features,

attitude, and costume, to the sculptured and stuccoed figures observed at Palenque and elsewhere. But still more interesting, even than the reproduction of the sculptures of Palenque in the potter's clay, is a border of hieroglyphics, running continuously with the feathered plumes of the human figure round the top of the vase, and thereby indubitably connecting it with America's most advanced era of intellectual progress.

In Central America, and not in Mexico, lay the ancient seats of highest aboriginal civilisation on the northern continent; and from thence the receding lines of its influence may be traced, with diminishing force, towards the northern borders of Mexico on the one hand, and the Isthmus of Panama on the other. In the latter region, recent discoveries, already referred to, have largely added to our knowledge of the arts of its ancient population. In a communication by Dr. J. King Merrit to the American Ethnological Society, embodying the results of personal observation, he remarks that, while golden ornaments were only met with occasionally, earthenware was encountered more or less in every grave; and he thus proceeds: "The specimens of pottery found associated with the gold figures are generally larger and of a finer quality than in the other huacals. To the antiquarian these possess a great interest, as they afford some idea of the domestic habits, and the degree of civilisation attained by that ancient people, of whose history we as yet know nothing. The specimens which I have seen, and a few that I have brought from Chiriqui, exhibit a high degree of advancement in the most difficult art of pottery: forms as symmetrical and graceful as any of classic or modern dates. The glazing and painting of some are in a wonderful state of preservation, the colours being bright and distinct, and many are entirely unaffected by the lapse of time."[1] Specimens of the Chiriqui pottery in the cabinet of the Historical Society of New York, and in the private collection of Dr. E. H. Davis, furnish evidence of skill in the potter's art very far in advance of the work of the northern Indians, and exhibit forms and patterns essentially different. Many of the vessels are tripods, and these frequently have movable clay pellets inserted in the hollow legs. With them are also found musical instruments of the class already referred to, wrought in clay in a variety of forms, but chiefly in those of birds and animals. A collection of these wind instruments, derived from various sources, has been reported on by a committee of the American Ethnological Society appointed

[1] *Report on the Huacals of Chiriqui*, by J. King Merrit, M.D., p. 7.

for that purpose. They were nearly all whistles or flageolets, in the form of birds or beasts, from one and a half to four and a half inches in diameter. The most perfect instrument has three finger-holes to produce the notes A, G, F, E, downwards. A fourth finger-hole gives the semitones of these notes; and by a particular process two or three lower notes are obtained. In one of the smaller instruments, a loose ball of baked clay within the air-chamber gives further variety to the notes. The most perfect of those musical instruments are simple; and, if they were the highest efforts of their ingenious manufacturers, do not necessarily imply any great mastery of the science of music. They bear, however, no resemblance to the rude drums and medicine rattles of the forest tribes; and indicate in all respects considerable advancement beyond their highest attainments. The example here given (Fig. 39) drawn from

FIG. 89.—Chiriqui Musical Instrument.

the original, in the possession of Dr. E. H. Davis, furnishes a fair illustration of this primitive class of wind instruments. It is painted in red and black on a cream-coloured ground, and measures nearly five inches in length. Others, both of the Isthmus and of Mexico, are simpler in form, but with a greater number of notes; while some of those found in the Chiriqui graves are little more than whistles, and may possibly have been mere children's toys. We cannot fail to notice, however, that in the prevailing forms of these musical instruments, as in the pottery and works in metal, the imitative tendency of art in the southern isthmus reveals the same mental characteristics already referred to. Vases, and earthenware vessels of every kind, have been modelled most frequently in imitation of vegetables, fruits, and shells of the locality, and decorated with devices copied from the native fauna and other familiar natural objects. In this respect their works disclose to us characteristics akin to those found to pervade all the phases of in

cipient civilisation in the New World; but which are nowhere more strikingly manifested than in that remarkable country, which still reveals so many traces of its arrested civilisation among the terraced steeps of the Cordilleras, where they look forth on the Pacific Ocean within the tropics, and thence southward to the 37th degree of latitude.

The intellectual characteristics which Peruvian art illustrates, originated fully as much in the social and political aspects of the national life, as in any original bent of the native artists. The historian of the Conquest has remarked, with acute discrimination, that "the character of the Peruvian mind led to imitation rather than invention, to delicacy and minuteness of finish rather than to boldness or beauty of design;"[1] and it may be said as justly of the specimens of his ceramic art, as of other products of his mechanical skill and artistic design, that they were frequently made on a whimsical pattern, evincing quite as much ingenuity as taste or inventive talent. We discern in the architecture and sculpture, as well as in much else that pertained to ancient Egypt, individual action controlled, in its formative expressions of thought, by the prescribed formulæ of the national creed and policy; while Hellenic art and genius reflect the expansive freedom of the emancipated human mind. The architecture of Peru, with its attendant arts, no less clearly betrays the influences of its singular polity and the unconscious restraints of national formulæ of thought; and we must give full value to such repressive elements before attempting to gauge the inventive originality of Peruvian genius. Contrasted with the repetition of a few simple forms in the pottery of the Indian tribes of North America, the ceramic art of Peru illustrates an essentially different mental development. Some of the specimens are purposely grotesque, and by no means devoid of true comic fancy; while, in the greater number, the endless variety of combinations of animate and inanimate forms ingeniously rendered subservient to the requirements of utility, exhibit a lively perceptive faculty which we look for in vain among any other people of the New World. Vessels for common domestic use were made in the most convenient forms, and were so well executed, that Dr. Tschudi speaks of many antique pitchers and large earthen jars still in daily use, and generally preferred for their durability to those of the modern potter. But in the manufacture of vessels designed for religious or sepulchral rites, or of those for the festive

[1] Prescott's *Conquest of Peru*, B. I. ch. v.

board, an unrestrained exuberance of fancy and curious ingenuity seem to sport with the pliant clay. An ancient Peruvian vessel in the collection of the New York Historical Society represents an old woman with a large jar at her back, held by a broad strap passing across her forehead, much in the same manner as the old Edinburgh water-carriers were wont to bear similar burdens, and as the Scottish fishwife still carries her creel. The same collection includes nearly a hundred vessels of different sizes and great variety of forms. Some are double: in this respect repeating, with considerable similarity, the *bijugué* or twin-bottle of the ancient Egyptians;[1] others embrace groups of four, six, or even eight vessels combined in one, and generally with a double spout, which also constitutes a characteristic feature of the water-pitcher called the "monkey," still in universal use in Brazil. A few are of simple and graceful forms; and others are modelled from melons, gourds, and other fruit,

FIG. 40.—Peruvian Pottery.

though generally with a grotesque animal-head added as the mouth of the vessel. The remainder include imitations of the duck, parrot, pelican, turkey, land-turtle, monkey, lynx, otter, llama, toad, cayman, shark, etc., arranged with endless diversity, to modify the form of the bottle, jar, or pitcher; or are painted and adorned with figures or ornamental patterns in relief.[2]

The ingenuity of the Peruvian potter was further employed in

[1] *Vide* Marryat's *History of Pottery*, 2d edit., fig. 190, and also a Chinese porcelain double-bottle, fig. 129.

[2] The following collections have afforded to the author opportunities of studying several hundred specimens of the rarer forms of Peruvian pottery, viz.:—The British Museum; the Louvre; the Society of Antiquaries of Scotland; the Historical Society of New York; the American Philosophical Society, Pennsylvania; the Museums of Boston and New York; the cabinets of J. H. Blake, Esq., Boston; Dr. E. H. Davis, New York; Joseph A. Clay, Esq., Philadelphia; Henry Christie, Esq., F.S.A., London; and Dr. Archibald Smith, Edinburgh. The tripod in the group, Fig. 40, is from Panama; all the others are Peruvian.

whimsical applications of acoustics to the more complicated specimens of his skill. This has been illustrated by Dr. Tschudi, from the abundant means within reach of an observer resident in the country. "All the moulded works of the ancient Peruvians," he observes, "have a peculiar character, which distinguishes them from those of the other American nations: a character which, by those versed in antiquities, will be recognised at first sight;" and he adds of the double vessels: "They were made in such perfection, that when they were filled with a liquid, the air, escaping through the opening left for that purpose, produced sounds at times very musical: these sounds sometimes imitated the voice of the animal which was represented by the principal part of the vessel: as in a beautiful specimen we have seen, which represents a cat, and which, upon receiving water through the upper opening, produces a sound similar to the mewing of that animal. We have in our possession a vessel of black clay, which perfectly imitates the whistle of the thrush, the form of which is seen on the handle. We also preserve two circular vases, which, being filled with water through a hole in the bottom, on being turned over, lose not a single drop, the water coming out, when it is wished, by simply inclining the upper part of the vase."

Mr. Blake, whose notes and valuable collections have furnished interesting materials for various chapters of this work, collected some curious specimens of the ancient potters' art from the Peruvian graves explored by him. One example, measuring twenty-two inches long, is in the form of a fish, with its tail partially turned round, like a salmon in the act of leaping; and another in that of a deer's head carrying a vase between its antlers. A third, modelled as a bird, with long legs like a crane, when filled with water, and moved gently backward and forward, emits sounds not unlike the notes of a bird, which most probably were designed to imitate the peculiar cry of the one represented. Small spherical vessels are very common, and Mr. Blake, who possesses several of them, conceives that they were designed for holding an infusion of the leaves of the *erythroxylon coca*. Similar vessels, he informs me, are now in use among the Indians; and an infusion of coca is frequently prescribed by their medical men. It is sipped from the cup through a small tube of reed or silver, eight or nine inches long.

The apparent reproduction of Etruscan and other antique forms in the Peruvian vases, has been referred to by more than one

traveller; nor, as we have seen, does the correspondence between such arts of ancient nations of the Old and New Worlds stop here. Mr. Joseph Marryat, while referring with undue disparagement to the products of Peruvian art, remarks: "Though this pottery is generally very uncouth in form and ornament, yet in some specimens the patterns, carved or indented, represent those well known as the 'Vitruvian scroll' and 'Grecian fret.' It is curious that a people so apparently rude should have chosen ornaments similar to those adopted in the earliest Grecian age, and found on the Lantern of Demosthenes at Athens, 336 B.C.; but which, however, it appears the Greeks themselves borrowed from the Assyrians. The 'honeysuckle pattern' is found also upon the earliest known monuments of Buddhist art, and the Etruscan upon the earliest Chinese bronzes."[1] An example of Peruvian black pottery, brought from Otusco, and now in the collection of the Historical Society of New York, is decorated with a row of well-defined Maltese crosses. The same "Cross of the Order of Malta" had already been noted with wonder among the sculptures at Mitla;[2] while that at Palenque, detached from numerous accessories which are no less indispensable parts of the sculptured tablet, as figured by Catherwood, has been made the basis of the most extravagant deductions: from the assumed mission of the Apostle Thomas to Anahuac, which solved all difficulties for the elder Spanish priests; to the Phœnician Hercules, and the Astarte of the Sidonians, which equally fanciful speculations of later times have substituted for the ecclesiastical legend.[3] But while the Vitruvian scroll is discernible on pottery in the collection of the Historical Society of New York, brought from Huarmachuco and Otusco, and the classic fret may be traced alike on pottery and sculptures of Central America and Peru, they are associated with a variety of designs bearing no trace of foreign origin, or with cruciform ornaments as little referrible to a Christian source as the constellation of the Southern Cross.

Whilst, however, in their highest, no less than in ruder stages, the arts of the New World are manifestly of native growth, there are not wanting specimens that challenge comparison with productions of classic art. These combine a grace and beauty of design which amply demonstrate the capacity of their executors

[1] Marryat's *History of Pottery and Porcelain*, p. 398.
[2] Kingsborough's *Mexican Antiquities*, vol. vi. p. 481.
[3] Wilson's *Conquest of Mexico*, p. 158.

for higher attainments, as is the case with two terra-cotta helmeted busts found at Oaxaca, of which Prescott remarks: "They might well pass for Greek, both in the style of the heads and the casques that cover them."[1] The same might be said with nearly equal truth of an ancient vase of the Quichuas of Bolivia, introduced in the group, Fig. 42; and also of a gracefully-modelled pendant vase, beautifully painted in patterns executed in red, yellow, and dark brown, which is engraved in D'Orbigny's *L'Homme Américain*, along with other characteristic specimens of the pottery of Bolivia and Peru.[2]

But the most valuable examples of the ceramic art of Southern America, are those which illustrate the physiognomy of its ancient

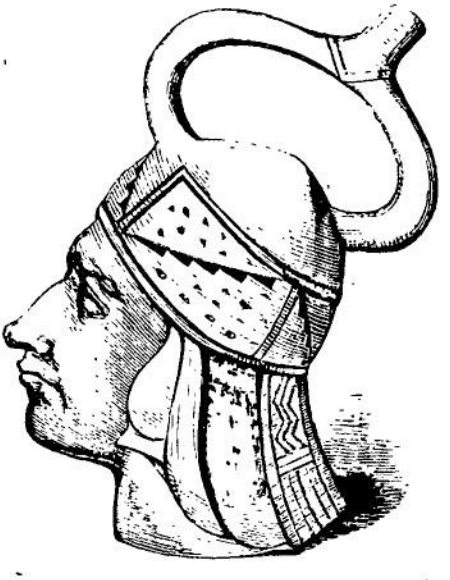


FIG. 41.—Peruvian Drinking Vessel.

population. By means of cranial and other physiological evidence, it has been maintained that the type of red man of the New World, from the Arctic circle to the Straits of Magellan, is so slightly varied, that "all the Indians constitute but one race, from one end of the continent to the other."[3] The cranial evidence will be considered in a subsequent chapter. But here, meanwhile, by

[1] *Antiquités Mexicaines*, t. iii.; *Exp.* ii. pl. 36; Prescott's *Mexico*, App. part i.
[2] *L'Homme Américain*, plates v. xiv.
[3] *Indigenous Races of the Earth*, p. 14.

means of the ingenious portraitures of the Peruvian potter's art, we find in the sepulchre, alongside of the fleshless skull, the sacred urn, which preserves for us the living features, the costume, and the familiar habits of the dead; and these features are neither those of the forest Indian, nor of the semi-civilized Mexican, but national features, as replete with a character of their own, as the fictile ware which supplies such valuable illustrations of the generations of an ancient and unknown past. One of those Peruvian drinking-vessels, of unusual beauty, from the Beckford Collection (Fig. 41), is placed by Mr. Marryat alongside of a beautiful Greek vessel of similar design, from the Museo Borbonico, Naples, without greatly suffering by the comparison. In this Peruvian vessel, there is an individuality of character in the head at once suggestive of portraiture, and of the perfection to which the imitative arts had been carried by the ancient workmen, in the modelling perchance of some favourite inca, prince, or noble. Another graceful portrait-vase, from Cuzco, in the collection of Dr. Archibald Smith,

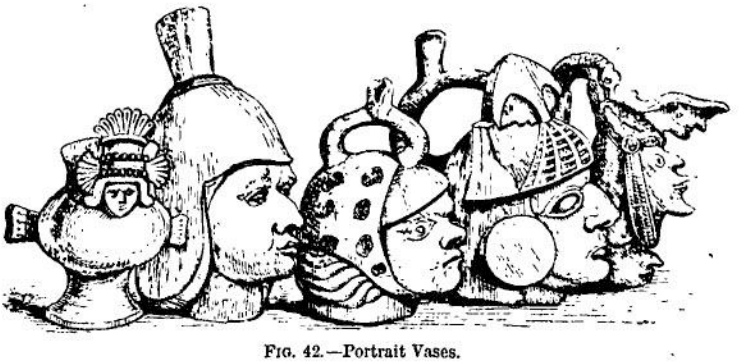


FIG. 42.—Portrait Vases.

of Edinburgh, represents the human head surrounded by ears of maize modelled with minute verisimilitude. A selection of this interesting class of vases grouped together in Fig. 42 illustrates a diversity of physiognomy in which we look in vain for the characteristic Indian countenance, with its high cheek-bones, its peculiar form of mouth, and strongly-marked nose. The group, ranging from left to right, includes a small Mexican vase of unglazed red ware, in the collection of the American Philosophical Society; an ancient portrait-vase of the Quichuas of Bolivia, from D'Orbigny's *L'Homme Américain;* and another in the cabinet of the Historical Society of New York, from Berue, representing apparently a female with a close-fitting cap, and the hair gathered up under

it behind. The next, from the collection of Dr. E. H. Davis, is a Peruvian drinking-vessel, with crested helmet or head-dress, and ear-pendants such as are frequently introduced in the small Mexican terra-cottas; and the vase on the right hand, brought by Colonel Thorpe from Mexico, includes a group of comic masks designed with great spirit.

Grotesque and humorous designs are by no means rare. One example figured by D'Orbigny, is a pitcher, in which, though the face is human, the limbs are those of the quadrumanous ape. But the monkey was familiar to the native artist, and is a frequent subject both of the sculptors' and potters' art. At Copan, Stephens was first rewarded with a glimpse of architectural remains, which clearly told of extinct arts and an obliterated civilisation of native growth, and awoke in his mind an interest stronger than he had felt when wandering among the ruins of Egypt, or exploring the strange architecture of the long-lost Petra. Following his Indian guide with hope rather than expectation of finding remains of a higher character than the combined labours of the forest-tribes were capable of producing, he suddenly found himself arrested amid the dense forest by a squared stone column about fourteen feet high, sculptured in bold relief on every side. "The front," he says, "was the figure of a man curiously and richly dressed: and the face, evidently a portrait, solemn, stern, and well fitted to excite terror." In this, as in all the other portrait-sculptures, carefully drawn by Catherwood in Central America and Yucatan, we look in vain for the Indian features, which, according to the deductions of the native school of American ethnologists, ought to be found as surely in such ancient portraits, as the universal type of American cranium is affirmed by Morton to be disclosed by every open grave. But by whatever race such ancient sculptures were wrought, they place certain truths of the past beyond doubt or cavil. "The sight of this unexpected monument put at rest at once and for ever, in our minds, all uncertainty in regard to the character of American antiquities; and gave us the assurance that the objects we were in search of were interesting, not only as the remains of an unknown people, but as works of art, proving, like newly discovered historical records, that the people who once occupied the continent of America were not savages." Searching amid the forest-glades, other sculptured statues lay broken or half-buried in the luxurious vegetation; and one stood "with its altar before it, in a grove of trees, which grew around seemingly to shade and shroud it as a

sacred thing. In the solemn stillness of the woods, it seemed a divinity mourning over a fallen people. The only sounds that disturbed the quiet of this buried city, were the noise of monkeys moving among the tops of the trees, and the cracking of dry branches broken by their weight. They moved over our heads in long and swift processions, forty or fifty at a time, some with little ones wound in their long arms, walking out to the end of boughs, and, holding on with their hind-feet or a curl of the tail, sprang to a branch of the next tree, and, with a noise like a current of wind, passed on into the depths of the forest. It was the first time we had seen those mockeries of humanity, and, with the strange monuments around us, they seemed like wandering spirits of the departed race guarding the ruins of their former habitations."[1]

Such is a slight glimpse of some of the teachings embodied in the art of the New World. It reveals a very striking diversity among the products of different localities and widely-separated areas; discloses to us some of the customs, the personal characteristics, and even the intellectual attributes of long-extinct generations; and furnishes an important gauge of native American civilisation. We have known of Mexican and Peruvian arts chiefly from the glowing pages of Spanish chroniclers; and among these their pottery is frequently described as equal to the best of Spanish manufacture.[2] Whether among either people any approximation to the potter's wheel had been made, is generally questioned. The more elaborate and complicated designs illustrate the modeller's, more than the potter's, dexterity and skill; and scarcely admitted of the useful application of the lathe or wheel. But their ingenious devices, and endless varieties of form, were well calculated to impress the conquerors with the evidence of native culture and inventive power. In examining broken specimens of their pottery, it is seen that the more complicated designs were formed in pieces, and wrought in moulds. In general it is imperfectly baked, and inferior in strength either to the ancient or modern pottery of Europe. A semi-barbarous element is also apparent in the frequent sacrifice of convenience and utility to grotesqueness of form, or ingenious trifling with the simplest law of acoustics. Such characteristics confirm the doubts suggested by other evidence as to the literal accuracy of early Spanish writers in some of their descriptions of native industrial and ornate arts. Nevertheless, the

[1] Stephens' *Travels in Central America*, vol. i. ch. v.
[2] *Relation Sig. de Cortez ap. Lorenzana*, c. 58.

contrast between the rude pottery made by the Mandans of the North-west, or turned up on the sites of northern Indian villages, and that which is found in ancient sepulchres of Mexico, Central America, and Peru, truly illustrates the wide difference between the nomades of the northern forest and those nations under the influence of Aztec and Inca rule: notwithstanding the partial development to which that civilisation had attained when it was rudely trodden out under the heels of conquerors more barbarous than the barbarians they dethroned.

CHAPTER XVIII.

LETTERS.

THE PERUVIAN QUIPU—ORIGIN OF LETTERS—THE INDIAN CADMUS—IDEOGRAPHIC WRITING—PICTURE-WRITING OF THE AZTECS—TOLTECAN SYSTEM—SIGNS OF THE AZTEC YEAR—SYSTEM OF NOTATION—PALENQUE HIEROGLYPHICS—ALPHABETIC CHARACTERS—POLYSYNTHETIC WRITING—ABBREVIATED CHARACTERS—ANTICIPATIONS OF FUTURE DISCOVERIES—CHINESE WRITTEN CHARACTERS—THE DRESDEN CODEX—SYSTEM OF QUIPU RECORDS—QUIPUS AND WAMPUM—PERUVIAN SYMBOLIC PAINTING—INDIAN WAMPUM—THE WAMPANOAG'S WAMPUM-BELTS—IROQUOIS KEEPER OF THE WAMPUM—WAMPUM MOUND-RECORDS.

In comparing the very diverse characters of Mexican and Peruvian civilisation, we are equally struck with the parallels and the contrasts which they illustrate in the progress of man from primeval darkness to intellectual life and light. But in one respect the civilisation of the southern continent, as illustrated by its *quipus* —with all the help of amautas, or chroniclers of history, annalists, and quipucamayocs, or accountants and registrars,—must be regarded as immeasurably inferior to that hieroglyphic system which tantalizes the student of American antiquities by its suggestive mysteries, amid the sculptured ruins of the older civilisation of the north. Compared even to the picture-writing of the Aztecs, the Peruvian system of mnemonics exhibits a method of preserving and communicating information singularly devoid of the intellectual characteristics which pertain to every other device of civilisation for a nation's chronicles. It was essentially arbitrary; dependent on the memory of those who employed and transmitted the ideas and images, which of itself it was incapable of embodying; and, above all, it had within itself no germ of higher development, like the picture-writing or sculpturing of the Egyptians, out of which grew, by natural progression, first ideography, and then the symbols of a phonetic analysis of speech: the rudiments of all higher knowledge, and the indispensable elements of intellectual progress.

It is consistent with the very nature of a highly developed

written language that the origin of its first germs should be lost among the vague shadows of primeval history, or preserved in mythic embodiment in an ideal Thoth, Cadmus, or Mercury. The discovery of letters approaches, indeed, so near to the divine gift of speech that Plutarch tells us in his *De Iside et Osiride*, when Thoth, the god of letters, first appeared on the earth, the inhabitants of Egypt had no language, but only uttered the cries of animals. They had, at least, no language with which to speak to other generations; and hence Bacon, passing, in his *Advancement of Learning*, from "that wherein man excelleth beasts" to that immortality whereunto man's nature doth aspire, exclaims:—"If the invention of the ship was thought so noble, which carrieth riches and commodities from place to place, and consociateth the most remote regions in participation of their fruits: how much more are letters to be magnified, which as ships pass through the vast seas of time, and make ages so distant to participate of the wisdom, illuminations, and inventions, the one of the other?" But it is not altogether to be ascribed to the forgetfulness by later generations of the benefactor to whom so great a gift as letters was due, that the origin of writing is obscurely symbolized in mythic characters. The Egyptian Thoth was in reality no deified mortal, but the impersonation of an intellectual triumph achieved by the combined labours of many generations, the successive steps of which can still be discerned. The origin of the hieroglyphics of Egypt is clearly traceable to the simplest form of picture-writing, the literal figuring of the objects designed to be expressed. Through a natural series of progressive stages this infantile art developed itself into a phonetic alphabet, the arbitrary symbols of sounds of the human voice. The first process was that of abbreviation, whereby a part was made to stand for the whole; a crown, for the Pharaoh, or king; the head for the whole animal, etc. The next step was that of associated ideas, or symbolism employed to express abstract terms, as the sceptre for *power*, the flowing urn for *libation*, the ringed cross, or tau, by some peculiar association, for *life*, the serpent for *eternity*, and the two combined for immortality. By this means the crude picture-writing became a series of ideographic symbols capable of expressing abstract thought; but in all probability it was not until the Egyptian was compelled to record on his monuments foreign names, with which he had no associated ideas, that he adopted the plan of phonetic signs, by assigning to the pictured object the value of its initial sound. Thus the tuft of a reed, *āke*, stood for A; a

goat or ram, *baampe* for B, etc. But while we find the name of Menes, the founder of Egyptian monarchy, written phonetically, the inscription on the Rosetta stone, graven in the reign of Ptolemy Epiphanes, combines with the purely alphabetic use of hieroglyphic signs, both picture and symbolical writing. The word *writing* or *letters* is literally figured by an ink-horn and reed, and the honorary title *ever-living* by the handled cross and serpent, etc. The primary picture-writing was never deliberately abandoned. It only passed, undesignedly, into the arbitrary representation of sounds by the process of writing on papyrus leaves instead of engraving on granite or limestone, whereby the abbreviations of a current hand tended more and more to deviate from the original sculptured symbol. To these demotic characters we owe the letters of Cadmus, the alphabets of Phœnicia, Greece, Rome, England: whereby "have not the verses of Homer continued twenty-five hundred years or more, without the loss of a syllable or letter; during which time infinite palaces, temples, castles, cities, have been decayed and demolished?"[1]

When we turn from the consideration of all the wondrous intellectual progress which is associated with the letters of Cadmus, to that other hemisphere which no solitary ray of Grecian intellect and culture helped to illuminate, there is a charm of singular interest in the discovery that there, too, the human mind had followed on the very same path in its struggle to emerge from darkness into the light of civilisation. Longfellow, in his embodiment of the Algonquin legends, represents Hiawatha mourning that all things fade and perish, even the great traditions and achievements, from the memory of the old men:—

> "Great men die and are forgotten.
> Wise men speak; their words of wisdom
> Perish in the ears that hear them,
> Do not reach the generations
> That, as yet unborn, are waiting
> In the great mysterious darkness
> Of the speechless days that shall be."

And so the Indian Cadmus, with his paints of diverse colours, depicts, on the smooth birch-bark, such simple figures and symbols, as are now to be found graven on hundreds of rocks throughout the North American continent; and are in constant use by the forest Indian in chronicling his own deeds on his buffalo robe, or recording those of the deceased chief on his grave-post. This is a simple

[1] Bacon's *Advancement of Learning.*

process of picture-writing, readily translatable, with nearly equal facility, into the language of every tribe. Deeds of daring against Indians or white men, are indicated by the native chronicler by means of the characteristic costume and weapons of each. Headless figures are the symbols of the dead; scalps represent his own special victims; and in like manner feats against the buffalo, or grizzly bear, are recorded in graphic depictions, as intelligible as any chronicle or monumental inscription of ancient or modern times. The totem of the tribe, and the name of each member of it, can in like manner be pictorially represented. An Indian signs his name in any written transaction with white men, by sketching his own adopted symbol, the eagle, bear, snake, or buffalo; the pine-tree, pumpkin, arrow, etc.: sometimes adding thereto the totem of his tribe. Mr. Schoolcraft has engraved a census of a band of Chippewa Indians in the Minnesota Territory, numbering in all one hundred and eight souls, drawn up in an intelligible form, and rendered to the United States agent by their chief, Nagonabe. Each family is denoted by a picture of the object expressive of its common or current name. Some of these are simple, such as a beaver-skin, an axe, a cat-fish: but others require the Indian interpreter's aid. An oval, coloured brown, with a crescent line drawn through it, represents a valley, the name of the master of the wigwam; a yellow circle, with eyes, and radiating lines, is the sun; and a human bust, with the hair in loose locks, is described as "easily recognised as the chief possessing sacerdotal authority." Added to each symbol, are a series of units, simple as those on the Rosetta stone, indicating the number in the family; and to the Indian agent, already familiar with the band, the whole formed a census-roll as intelligible as any regular return, in writing and Arabic numerals, could have been.[1] This system of writing includes well-recognised symbols for the Great Spirit and many inferior objects of worship or superstitious reverence. The sun, the moon, lightning, rain, the earth, the sky, life and death, all have their appropriate renderings; and thus the rude Indian has developed for himself the very same means of ideographic inscription which lie at the root of the hieroglyphic and demotic writing of Egypt, with its phonetic alphabet, and all the later triumphs of letters. Moreover, his whole mode of thought is carried out under a process of symbolism, readily translatable into picture-writing; and when Indians are gathered in the neighbourhood of white settlements or trading-posts every

[1] *History of the Indian Tribes of the United States*, vol. ii. p. 222.

white man becomes known by an Indian name, sometimes more pointedly distinctive than flattering, *e.g.*, crooked-pine, lame duck, or pumpkin-belly. This mode of descriptive surnames is common to all primitive people, and indeed survives in a much later stage, as is seen in our Malcolm Canmore, William Rufus, and Edward Longshanks. It appeals to the same universal appreciation of associated ideas, out of which grew the family crests, rebuses, and canting heraldry of medieval Europe.

The picture-writing of the Aztecs, though greatly improved in execution, and simplified by many abbreviations, was the same in principle as the rude art of the northern Indians. When Cortes held his first interview with the emissaries of Montezuma, he observed one of the attendants of Teuhtlile, the chief Aztec noble, busily sketching on canvas the Spaniards, their peculiar costumes and arms, their horses and ships. The skill with which every object was delineated excited the admiration of the Spaniards; and by such means a report of all that pertained to the strange invaders of his dominions was transmitted to the Aztec sovereign. But however greatly superior the execution of this Aztec report might be, it was manifestly no advance on the principle of Indian picture-writing: nor can we be in much doubt as to its style of execution, since Lord Kingsborough's elaborate work furnishes so many fac-similes of nearly contemporary Mexican drawings. In the majority of these, the totemic symbols, and the representations of individuals by means of their animal or other cognomens, are abundantly apparent. The figures are for the most part grotesque and monstrous, from the very necessity of giving predominance to the special feature in which the symbol is embodied. To the generation for which such were produced, the connexion between the sign and the person or thing signified would be abundantly manifest. But a very brief interval suffices to render symbols and abbreviations unintelligible; and within less than a century after the Conquest, De Alva could not find more than two surviving Mexicans, both very aged, capable of interpreting this Aztec literature. It was, in truth, only a system of mnemonics, superior to the quipus of the Peruvians, but still mainly dependent on memory and an arbitrary association of ideas; and thereby suggesting to the initiated what no literal interpretation can deduce from it. Such associated ideas when once lost are for the most part irrecoverable; and it does not seem probable that the art of deciphering the picture-writings of Mexico will ever be carried much further than it has been; or indeed, that

the majority of its records would be found to embody any new or important fact. Attempts have indeed been made to apply the Mexican language to its symbols in the same way that the Coptic has been used as the key to Egyptian phonetic writing. But the process is to a great extent one of self-deception. A writer in the *Foreign Quarterly Review* remarks: "The phonetic system of the Toltecans is intelligible at a first glance. The sounds intended to be conveyed by the symbols are conveyed syllabically or heraldically. The names common even to this day among the American aborigines, such as wolf, great bear, rattlesnake, etc., are represented by crests rudely fashioning the same animal form, which surmount the helmets of their warriors and the diadems of their kings. A single instance will suffice to explain this proposition. The head of a Toltecan king appears along with two others sculptured in the pyramidal tower of Palenque. Over it is the name inscribed in an oblong phonetic rectangle, corresponding to the Egyptian cartouche. The name is Acatlapotzin. It is composed of two words; the first implying *reeds*, the other *hand*. The symbol of *a hand* therefore, and the symbol of *reeds*, convey the sounds of the name Acatla-Potzin."[1]

Supposing this rendering to be correct, what does the reader conceive he has gained by it, in the absence of all known history of any Toltecan or Aztec king Acatlapotzin, that would not be equally plain if he were called King Reed-hand; as we have Red Jacket, Black Hawk, and other well-known Indian chiefs? It is abundantly manifest that neither in the northern Indian, nor in the Aztec picture-writing, did the symbol or totem possess any phonetic value, strictly speaking. A painted *black hawk* was not the visual equivalent of the sound of the Indian words in the Sac or Pottawatomie dialect of Black Hawk's tribe, but of the chief known by that name in any of its translations; just as the picture brought by Montezuma's scout was meant as a representation of the Spanish leader, and not as phonetic symbols of the words Hernando Cortes. Whilst, therefore, the name of the fertile region of *Tlascala* or *Tlaxcallan*, "the place of bread," or of the Tezcucan chief *Nezahualcoyotl*, "the hungry fox," might be represented by objects, which united together according to the Mexican vocabulary, constituted a rebus of each: it is a confusion of terms to call such representations phonetic signs or symbols of sounds. As civilisation advanced, however, many signs were introduced

[1] *Foreign Quarterly Review*, 1837, vol. xviii. p. 52.

as symbols of ideas; and hence involved the germs of a word-alphabet, like the Chinese. Thus, *footprints* denoted migration, or travelling; a *tongue*, speaking, or life; and a *bloody heart*, sacrifice; but in these the very tendency of such advancement was in an opposite direction from any phonetic system, such as the assumed interpretation of the Palenque sculpture points to. But if the Toltec and Aztec systems of writing bore any affinity to each other, the Palenque hieroglyphic may be a date instead of a name. A *reed* was one of the four signs of the Aztec year, and a *bundle of reeds* the symbol of a cycle of fifty-two years, within which the calendar was rectified to true solar measurement by the addition of thirteen days. The latter symbol accordingly preceded each sign of a year relating to certain subdivisions of time in the calendar.

It is in the figures thus employed in the chronology of the Aztecs that we find the highest development of their system of writing, and there the symbolic character of the signs is unmistakable. Their four symbols of the year, a *reed*, *flint*, *house*, and *rabbit*, were equivalent to the signs of the four elements: a correspondence to the system in use in the calendar of the Chinese, Japanese, and other Asiatic nations, assigned by Humboldt as one of the traces of an Asiatic origin of American civilisation apparent to him in the Aztec chronology. Again, there were twenty signs of the days, including a repetition of those of the year, in a manner that admitted of an ingenious indication of the subdivisions of months into weeks of five days, but which seems wholly incompatible with any idea of phonetic writing. The process was rather the reverse, the name of the sign being attached to the day, as in our names for the days of the week.

The evidence of the character and extent of Aztec civilisation, whether original or borrowed from Toltec predecessors, which is furnished by the measurement of time, and the construction of the calendar, has been so largely dwelt upon by Humboldt as to render a mere reference to it sufficient. By the unaided results of native science, they had effected so accurate an adjustment of civil to solar time, that when the Europeans first landed in Mexico, their reckoning, according to the unreformed Julian calendar, was nearly eleven days in error, compared with that of the barbarian nation whose civilisation they so speedily extinguished. In the construction of the calendar the four symbols of the year also marked the four subdivisions of the great cycle of fifty-two years: the

annual portions of which were expressed by a series of dots, from one to thirteen, and beyond the first subdivision, by a change of the symbol, and a repetition of the dots associated with a second line of these simple arithmetical signs. A bundle of reeds, indicating a group of years, was the sign of the completed cycle, and in association with the year-sign, marked the half-centuries in the calendar. By such combinations a periodical series of conjunct signs admitted of the construction of the whole chronological table with a very few symbols and numerals, employed in a manner that seems to involve the germ of that value of position by which the modern European system of arithmetic is specially distinguished.

The system of notation in the arithmetic of the Aztecs may also properly come under notice along with their writing, Like that of nearly all other nations, it was essentially decimal, or more strictly, vigesimal. The first twenty numbers were expressed by a corresponding series of dots. There were separate names for the first five, and for ten, fifteen, and twenty, the last of which had its special sign of a *flag*. Intermediate numbers were written like the Roman numerals, five and one being six, five and two seven; and in addition to those signs and combinations, four hundred, the square of twenty, was marked by a *plume*, and eight thousand, the cube of twenty, by a *purse*. The latter signs, halved or quartered, were sometimes used to indicate corresponding fractions of the sums; and by this means, imperfect as it may seem, the Mexicans were able to indicate any numerical quantity, and to work out arithmetical calculations with ease. We thus see that the simplest arbitrary signs sufficed for the system of notation devised by the Aztecs, with only the addition of the flag, plume, and purse: symbols, and not phonetic signs; though used in designation like our own terms, a *yoke*, a *brace*, a *couple*, a *score*. They may remind us that in our more perfect system of notation we still employ a series of arbitrary signs essentially unphonetic; for whether the Roman or Arabic numerals are employed, they represent the idea of number only, and are translated with equal propriety into the equivalent sounds of every language.

But America has still, beyond this, a higher system of writing, more correctly styled hieroglyphics, to which reference has been already made, in alluding to the interpretation of the sculptures of Palenque. On the sculptural tablets of Copan, Quirigua, Chichen-itza, and Palenque, as well as on the colossal statues at Copan and

other ancient sites in Central America, groups of hieroglyphic devices occur, arranged in perpendicular or horizontal rows as regularly as the letters of any ancient or modern inscription. The analogies to Egyptian hieroglyphics are great, for all the figures embody more or less clearly defined representations of objects in nature or art. But the differences are no less essential, and leave no room to doubt that, in those columns of sculptured symbols we witness the highest development to which picture-writing attained, in the progress of that indigenous American civilisation so singularly illustrative of the intellectual unity which binds together the diverse races of man. A portion of the hieroglyphic inscription which accompanies the remarkable Palenque sculpture of a figure offering what has been assumed to represent an infant, before a cross, will best suffice to illustrate the characteristics of this form of writing. The sculpture is given by Dupaix, Lord Kingsborough, and Stephens, and has been made the subject of many extravagant and profitless theories and conjectures. Mr. Stephens vouches for the accuracy of Mr. Catherwood's drawings of the hieroglyphics both of Copan and Palenque; and of this I have been satisfied by a comparison of them with a large sculptured slab brought from the same site, and now at Washington. Mr. Stephens adds, in describing the Palenque hieroglyphics: "There is one important fact to be noticed. They are the same as were found at Copan and Quirigua. The intermediate country is now occupied by races of Indians speaking many different languages, and entirely unintelligible to each other; but there is room for the belief that the whole of this country was once occupied by the same race, speaking the same language, or, at least, having the same written characters."[1]

The impressions produced on the mind by the investigation of the few specimens yet recovered of those ancient and still unintelligible native chronicles, are of a singularly mixed kind. They furnish proofs of intellectual progress which cannot be gainsayed, while baffling us at the same time by a mystery which all our higher intellectual progress leaves still unsolved. It would be presumptuous indeed to deny the possibility of some future solution of the mystery; but if such is ever found it will be by a totally different process from that which enabled Young and Champollion to solve the Egyptian riddle. In the specimen engraved here (Fig. 43), the inscription begins with a large initial symbol, extending over two lines in depth, like the illuminated initials of a

[1] *Incidents of Travel in Central America*, vol. ii. ch. 20.

medieval manuscript. It is obviously not a simple figure, but compounded of various parts, so abbreviated that their original pictorial significance has as utterly disappeared, as the meaning of the primary monosyllables in the vocabularies of living languages. The principal figure, which might be described as a shield, reappears in combination with a human profile, in the fifth line ; again, slightly modified, in another combination, at the end of the same line ; and twice, if not three times, in the line below. The human hand in different positions, the heads of quadrupeds and birds, and some other definite objects, can be recognised, alone, or in combination with others less defined, or unfamiliar. In carefully compar-

FIG. 43.—Palenque Hieroglyphics.

ing the hieroglyphic inscriptions hitherto published with the Palenque slab at Washington, the like recombinations of the several elements of detached figures are detected ; while, as seen in the last line of the example given above, occasional signs, closely corresponding to regular alphabetic characters, occur in union with hieroglyphic groups. But, while the recurrence of the same signs, and the reconstruction of groups out of the detached members of others, clearly indicate a written language, and not a mere pictorial suggestion of associated ideas, like the Mexican picture-writing, it is

not alphabetic writing. In the most complicated tablet of African hieroglyphics, each object is distinct, and its representative significance is rarely difficult to trace. But the majority of the hieroglyphics of Palenque or Copan appear as if constructed on the same polysynthetic principle which gives their peculiar and distinctive character to the languages of the New World. This is still more apparent when we turn to the highly elaborated inscriptions on the colossal figures of Copan. In these all ideas of simple phonetic signs utterly disappear. Like the *bunch-words*, as they have been called, of American languages, they seem each to be compounded of a number of parts of the primary symbols used in picture-writing, while the pictorial origin of the whole becomes clearly apparent. In comparing these minutely elaborated characters with those on the tables, it is obvious that a system of abbreviation is employed in the latter; and thus each group appears with the greater probability to partake of that peculiar characteristic of the whole grammatical structure of American language, as shown in its word-sentences. The plan of thought of the American languages is concrete, while certain euphonic laws lead to the dropping of portions of the words compounded together, in a manner exceedingly puzzling to the grammarian. By the same compounding process, new words are formed, as in the Algonquin *showiminaubo*, wine, *i.e.*, *showimin*, a grape-berry, *aubo*, liquor; *ozhebiegunaubo*, ink, *i.e.*, *ozhieugun*, a writing; *wazhebiegad*, a writer; whence *ozhebiegai*, he writes: and *aubo*, liquor. The latter, like all abstract terms, is only used in compound words, as in *ishkodaiwaubo*, fire liquid, or whisky. So also *makuhdaw-ekoonuhya*, a priest or clergyman, *i.e.*, *muhkuhda*, black; *ekoonuhya*, he is so dressed: the person who dresses in black, etc. An analogous process seems dimly discernible in the abbreviated compound characters of the Palenque inscriptions. But if the inference be correct, this of itself would serve to indicate that the Central American hieroglyphics are not used as phonetic, or pure alphabetic signs; and this idea receives confirmation from the rare recurrence of the same group.

Such inscriptions cannot be confounded with the Mexican picture-writings, by any one who attempts an intelligent comparison of the two. In the latter, as in a picture, the eye searches for the most prominent features of the ideographic design, and interprets the various parts in their relation to one representation. But the Palenque inscriptions have all the characteristics of a written language in a state of development analogous to the Chinese,

with its word-writing; and like it they appear to have been read in columns from top to bottom. The groups of symbols begin with a large hieroglyphic on the left-hand corner; and the first column occupies a double space. It is also noticeable that in the frequent occurrence of human and animal heads among the sculptured characters they invariably look towards the left; an indication, as it appears to me, that they are the graven inscriptions of a lettered people, who were accustomed to write the same characters from left to right on paper or skins. Indeed, the pictorial groups on the Copan statues seem to be the true hieroglyphic characters; while the Palenque inscriptions show the abbreviated hieratic writing. To the sculptor the direction of the characters was a matter of no moment; but if the scribe held his pen, or style, in his right hand, like the modern clerk, he would as naturally draw the left profile as we slope our current hand to the right. Arbitrary signs are also introduced, like those of the phonetic alphabets of Europe. Among these the ┳ repeatedly occurs: a character which, it will be remembered, was also stamped on the Mexican metallic currency.

The enterprising traveller, to whose researches so much of our knowledge is due, when reviewing the evidences of the intellectual progress of this ancient American people, dwells with fond favour on the idea he latterly adopted, that the ruins explored by him were of no very remote date; because he felt that the nearer he could bring the builders of those cities to our own times, the greater is our chance of recovering the key to their language and the inscriptions in which their history now lies entombed. Palenque, it cannot be doubted, was a desolate ruin at the date of the Conquest. Backward behind the era of Europe's first knowledge of the New World, we have to grope our way to that age in which living men read its graven tablets, and spoke the language in which they are inscribed; yet other cities survived to share in the later desolation of the Conquest, and Stephens thus sanguinely records his latest cherished hopes: "Throughout the country the convents are rich in manuscripts and documents written by the early fathers, caciques, and Indians, who very soon acquired the knowledge of Spanish and the art of writing. These have never been examined with the slightest reference to this subject; and I cannot help thinking that some precious memorial is now mouldering in the library of a neighbouring convent, which would determine the history of some one of these ruined cities; moreover, I cannot help believing that the tablets of hieroglyphics will yet be read. No

strong curiosity has hitherto been directed to them; vigour and acuteness of intellect, knowledge and learning, have never been expended upon them. For centuries the hieroglyphics of Egypt were inscrutable; and, though not perhaps in our day, I feel persuaded that a key surer than that of the Rosetta stone, will be discovered. And if only three centuries have elapsed since any one of those unknown cities was inhabited, the race of the inhabitants is not extinct. Their descendants are still in the land, scattered perhaps, and retired like our own Indians, into wildernesses which have never yet been penetrated by a white man, but not lost; living as their fathers did, erecting the same buildings of lime and stone, with ornaments of sculpture and plaster, large courts and lofty towers with high ranges of steps, and still carving on tablets of stone the same mysterious hieroglyphics; and if, in consideration that I have not often indulged in speculative conjecture, the reader will allow one flight: I turn to that vast and unknown region, untraversed by a single road, wherein fancy pictures that mysterious city, seen from the topmost range of the Cordilleras, of unconquered, unvisited, and unsought aboriginal inhabitants."

It is a fascinating dream. But lettered nations do not dwell apart through long centuries, hidden beyond the untravelled wilderness of so narrow a continent. It may indeed be that the tablets of Palenque shall yet be read, but it will be by no mysterious emergence of the lettered descendants of their sculptors from the shadows of that unexplored forest which stretches between the Cordilleras and the Caribbean Sea. The simpler elements of the graven characters appear, as we have seen, to admit of re-arrangement into new groups, like the alphabetic elements of our written or printed words. Some of the figures are also simple, representing a human or animal profile, a shield, or a crescent; but others are highly complicated, and defy any attempt at intelligible interpretation of their representative or symbolic significance. They are no crude abbreviations, like the symbols either of Indian or Aztec picture-writing; but rather suggest the idea of a matured system of ideography in its last transitional stage, before becoming a perfect word-alphabet like that of the Chinese at the present day. Such I conceive it, in a less simple condition, actually to have been: a holophrastic or word-sentence alphabet; and, as such, a uniformity of hieroglyphics may have been compatible with the existence of diverse dialects throughout the extensive region in which they were used.

In tracing the natural progress of a native American system of writing through so many successive steps, from the infantile condition of the rude Indian's birch-bark paintings to the most advanced stage of letters short of true alphabetic characters and phonetic signs, it is impossible to overlook the evidence thus afforded of a great lapse of time. The Chinese, whose civilisation and arts present so many points of resemblance to those of the New World, had advanced little, if at all, beyond the same stage in their system of writing, with its two hundred and fourteen characters, when they paused, and left to more favoured races the simpler vehicles of written thought. But by this arresting of their intellectual development at the stage of symbolized ideas instead of radical sounds, they possess a series of written characters which are employed with equal facility in Cochin-China, Japan, Loo-Choo, Corea, and in China itself, for expressing the words of languages mutually unintelligible. In this there is no analogy to the common use of the Roman alphabet among so many of the nations of Europe; but in our simple Arabic, or even in the Roman numerals, we have an apt illustration of written characters representing ideas, entirely independent of specific words or sounds. Thus 20 signifies, *vinsati*, *εκοντι*, *viginti*, *venti*, *vingt*, *zwanzig*, or *twenty*; and when we write Louis XIV., it may be read with equal correctness, Louis the fourteenth, or *Louis quatorze*. In reality, however, the analogy is greater when we compare the symbolic writing of Egypt with the supposed graven signs of word-sentences on the tablets of Palenque; and the interpretation of each doubtless depended for its precision on associated ideas, such as no mere philological investigations could enable us to recover.

A single illustration will suffice. On the wall of the temple of Philœ, at the first cataract of the Nile, the ram-headed god Kneph is represented seated, and at work on a potter's wheel, with a group of hieroglyphics over his head, which have been thus translated. Mr. G. R. Gliddon, agreeing with Dr. W. C. Taylor, reads them: "Knum the Creator, on his wheel, moulds the divine members of Osiris (the type of man) in the shining house of life, or the solar disk."[1] Mr. Birch of the British Museum furnishes this very different reading of the same inscription: "Phtah Totonem, the father of beginnings, is setting in motion the egg of the sun and moon, director of the gods of the upper world."[2] Without the

[1] *Ancient Egypt*, 12th Edition, p. 28.
[2] Arundale and Bonomi's *Antiquities*, British Museum, p. 13.

pictorial symbol of the divine ram-headed potter, it may be doubted if the two readings would have even presented such slight correspondence as they do. It is not, therefore, wholly without reason that Sir G. C. Lewis has characterized the system of interpretation of modern Egyptologists as "flexible and arbitrary," and their process as "necessarily uncertain and inconclusive;"[1] and that Prescott, after commenting on the Palenque writing as exhibiting an advanced stage of the art, with little indications of anything more than the common elements of such writing to connect it with Egyptian hieroglyphics, adds: "That its mysterious import will ever be deciphered is scarcely to be expected. The language of the race who employed it, the race itself, is unknown. And it is not likely that another Rosetta stone will be found with its tri-

FIG. 41.—Hieroglyphic Writing.

lingual inscription to supply the means of comparison, and to guide the American Champollion in the path of discovery."

Among the examples of ancient picture-writing illustrated in Lord Kingsborough's elaborate work on Mexican antiquities, the most curious of all is the Dresden codex, which invites special attention as bearing scarcely any traces of a common origin with the highly coloured and fantastic picturings of the Aztec manuscripts. The figures of objects, though delicately drawn, frequently consist of arbitrary or nondescript designs, and, as Prescott says, "are possibly phonetic. Their regular arrangement is quite equal

[1] *Astronomy of the Ancients*, pp. 386, 391.

to the Egyptian. The whole infers a much higher civilisation than the Aztec, and offers abundant food for curious speculation." Many of them are, indeed, pictorial representations accompanied by hieroglyphic characters arranged in lines, as though constituting a written commentary or description along with numerical notation. They certainly suggest a resemblance to the Palenque hieroglyphics which is totally wanting in the Mexican paintings. Nor is there any improbability in the supposition that the traces of a higher Toltec civilisation survived, and exercised its ameliorating influences on the fierce Aztec conquerors. In the accompanying illustration (Fig. 44), copied from Lord Kingsborough's version of the Dresden codex, it seems in no degree irreconcilable with the traces of a higher antiquity in the ruined cities of Central America, that we have here an example of the written characters which figure on the sculptured tablets of Palenque.

Compared with the hieroglyphic writing of ancient Central America, or even the picture-writing of the Aztecs, the Peruvian quipu was a barbarous substitute. The name originally signified a knot; and the quipu in use for recording facts, or committing ideas to safe keeping for transmission to future generations, consisted of a cord of different-coloured strings, to which others were attached, distinguished by their colours. With these specific ideas were associated. Thus *yellow* denoted gold and all the allied ideas; *white*, silver or peace; *red*, war or soldiers; *green*, maize or agriculture, etc.; and each quipu was in the care of its own *Quipucamayoc* or keeper, by whom its records were interpreted in any doubtful case. Upon the cords the requisite number of knots were made, and when used for arithmetical purposes, they could be combined to represent any series of numbers, and employed in difficult computations with great facility. In their arithmetical system a single knot meant *ten;* two single knots together, *twenty;* a knot doubled and interwined, *one hundred;* tripled after the same fashion, *one thousand;* and by the union of two or more of such, *two hundred, two thousand,* etc. The colour, the mode of intertwining the knots, the twist of the cord, the distance of the knot from the main cord, or of the several knots from each other, had each a special significance, indispensable to the proper interpretation of the quipu. By means of such records, well-trained officials kept registers of the census and military rolls, accounts of the revenues, and much other important statistical information. Each province

had its own registrars, with varying details suited to the specialities of their district, its form of tribute, or the nature of its mineral, pastoral, or agricultural resources; and the interpretation of the national quipus required the aid of registrars from many remote provinces. Annalists, chroniclers, genealogists, and poets, were all trained to transmit by tradition the chain of facts or ideas associated with the arbitrary signs of the quipus, and by the like means information of every kind was perpetuated. Acosta mentions that he saw a woman with a handful of knotted strings of diverse colours, which she said contained a general confession of her life.

With the fall of Montezuma's empire, its picture-writings were abandoned to the same fate as the Arabic manuscripts of Granada; and only a few imperfect fragments or chance copies have survived to reflect the ingenuity and determine the progress of Aztec culture. But the rude system of the Peruvian quipu perished with its keepers; and a fragment of pottery, or the masonry of a ruined roadway station, is more eloquent for us than all the many-coloured and knotted registers of the Incas could be. But in another respect the quipus of the Peruvians have a singular interest for us, for it is impossible to overlook the correspondence between them and the wampum in use by the American Indians for a similar purpose. Boturini, indeed, discovered a specimen of the quipu in Tlascala, which had nearly fallen to pieces with age; and both M'Culloch and Prescott only reject his inference that the ancient Mexicans were acquainted with the Peruvian mode of recording events, by assuming the Tlascalan quipu to have been an Indian wampum belt. But the correspondence between the Peruvian quipus and the Indian wampum-belts, and their use in almost precisely the same way for the purpose of registering events, present coincidences too remarkable to be accounted for as mere accidental resemblances. Nor is our interest diminished, when it is borne in remembrance that the wampum-belt of the North American Indian reproduces the arbitrary mnemonic system of Peru, alongside of a totally independent native system of picture-writing.

Before comparing the almost identical *memoria technica* of the southern Peruvians and northern Indians, it is important to determine the actual acquirements and usages of the Peruvians in relation to painting or picture-writing. Prescott, indeed, assumes their total ignorance in this respect, and derives from it an additional proof of the entirely distinct origin of all the characteristic

elements of Peruvian and Mexican civilisation.[1] But it is inconceivable that a people skilled in modelling in clay copies of every familiar object in nature, and sporting with an exuberant fancy in endless grotesque and ingenious devices; and who, moreover, painted their pottery and wove their parti-coloured dresses with considerable taste and great variety of pattern: should have made no attempt at drawing or painting on agave-paper or canvas. Humboldt, who notices the discovery of bundles, or books of picture-records, among the Panoe Indians of South America to the east of the Andes,[2] puts this beyond question. "It has recently been doubted," he remarks in a supplementary note, "whether the Peruvians were acquainted with symbolic paintings in addition to their quipus. A passage taken from the *Origen de los Indios del Nuevo Mundo* (Valencia, 1610, p. 91), leaves no uncertainty on this point. After speaking of the Mexican hieroglyphics, Father Garcia adds: 'At the beginning of the Conquest, the Indians of Peru made their confessions by paintings and characters, which indicated the Ten Commandments, and the sins committed against these Commandments.' Hence we may conclude that the Peruvians made use of symbolic paintings; but that these were more grotesque than the hieroglyphics of the Mexicans, and that the people generally made use of knots or *quipus*."[3] It was not, therefore, because of their ignorance of the rude picture-writing, equivalent, probably, to all that was effected by the Aztec chronicler in the depiction of sensible objects with their associated ideas, that the Peruvians adhered by preference to their quipus. The rudest picture-writing is, indeed, far before the most perfect system of quipus as a germ of possible development. But if we look, for example, at the "Lawsuit in Hieroglyphical Writing," engraved by Humboldt,—a document prepared for pleading and evidence before a legal tribunal,—we find no series of word-symbols setting forth the case, but a mere ground-plan accompanied by pictorial references to the parties, and some leading points in the suit, which must have depended almost as entirely on memory and the association of ideas for its practical use, as the parti-coloured and knotted quipus in the hands of well-trained Peruvian amautas.

Bearing in remembrance, then, the perfection to which the use of the quipu had been brought by a well-systematized training and division of labour, and the faith reposed in its accuracy in the most

[1] *Conquest of Peru*, B. I. ch. iv. p. 121.

[2] Humboldt's *Researches*, London, 1814, vol. i. p. 174. [3] *Ibid.*, vol. ii. p. 221.

practical questions of Peruvian reckoning and statistics: let us now inquire what the Indian wampum was in its most perfect form and use. The germs of a possible native civilisation among the Indian tribes of North America are naturally to be sought for in that remarkable league of the Iroquois, by which the conquests of France were so effectually arrested to the south of the St. Lawrence; and among the members of that league we find the wampum belt in use for all their most sacred and important records. By means of the wampum the laws of the League were recorded, and every contract or treaty was defined and guaranteed.

Wampum consists of beads of different colours strung together, and generally woven into a belt. Hubbard describes it as "of two sorts, white and purple. The white is worked, out of the inside of the great concho, into the form of a bead, and perforated to string on leather. The purple is worked out of the inside of the muscle shell. They are woven as broad as one's hand, and about two feet long. These they call belts, and give and receive at their treaties as the seals of their friendship."[1] The colours of the wampum, however, and indeed its whole material, varied at different periods and among diverse tribes. One singularly interesting example of its use as the evidence and sole title-deed of an extensive transfer of land, was preserved in England, until very recent years, by Mr. Granville John Penn, a descendant of William Penn, and is now in the cabinet of the Historical Society of Philadelphia. It is the belt of wampum delivered by the Lenni-Lenapé sachems to the founder of Pennsylvania, at "the Great Treaty," under the elm-tree at Shackamox in 1682. After having been handed down for generations in the founder's family, it was presented to the Historical Society of Philadelphia in 1857. It is composed of eighteen strings of wampum, formed of white and violet beads worked upon leather thongs; and the whole is woven into a belt twenty-eight inches long, and two and a half inches broad. On this five patterns are worked in violet beads on a white ground, and in the centre Penn is represented taking the hand of the Indian sachem: the former being the larger figure of the two, and indicated by his European head-dress.[2]

In 1675 the famous war of the New England chief, Metacomet, the sachem of the Wampanoags,—better known as King Philip,

[1] Hubbard's *Narrative, Indians in New England*, p. 40.

[2] This wampum-belt is accurately figured, the size of the original, in the *Memoirs of the Historical Society of Pennsylvania*, vol. vi.

broke out, and threatened for a time the extermination of the colonists. Before its close, thirteen towns in Massachusetts, Plymouth, and Rhode Island, had been destroyed, and scarcely a family in New England had escaped the loss of some of its members. When at length Philip had fallen, and the hostile tribes were almost exterminated, Annawon, an aged chief, one of the last surviving sachems of the Wampanoags, approached Captain Church, the leader of the colonists, and thus addressed him: "Great Captain, you have killed Philip, and conquered his country. I and my company are the last that war against the English. You have ended the war, and therefore these belong to you." He then handed to him two broad belts elaborately worked in wampum, "edged with red hair from the Mahog's country." One of them reached from the shoulders nearly to the ground. It was the Magna Charta of the New England tribes, who had now fought their last fight. They were pitilessly exterminated. Old Annawon himself was put to death, along with Tispaquin, the last of Philip's great sachems, and all the prisoners who had been active in the war. The remainder were sold as slaves, including a poor boy, the son of Philip, whose only crime was his relationship to the great chief. After keen discussion as to his fate, in which Increase Mather pleaded against mercy, the boy's life was spared. The New England divine urged the case of Hadad, of the king's seed in Edom, spared as a little child, when Joab, the captain of the host, had smitten every male among the Edomites, who survived to rise up as the adversary of Solomon, when he heard in Egypt that David slept with his fathers, and Joab, the captain of the host, was dead. Perhaps it had been better for the son of the great Wampanoag sachem to have shared the fate of the vanquished chiefs. He was finally sent as a slave to Bermuda, from whence he never returned to dispute the possession of his father's wampum, and the rights of which it was the symbol.

The original Wampum of the Iroquois, by means of which the laws of the League were recorded, is described by Mr. Lewis H. Morgan, in his history of the League, as made of spiral fresh-water shells, strung on deerskin thongs or sinews, and the strands braided into belts, or simply united into strings. His narrative of the mode of using these northern *quipus* will best illustrate the close analogies they present to those of the southern continent. Describing the great councils of the League, he says: "The laws explained at different stages of the ceremonial were repeated from strings of

wampum, into which *they had been talked* at the time of their enactment. In the Indian method of expressing the idea, the string or the belt can tell, by means of an interpreter, the exact law or transaction of which it was made, at the time, the sole evidence. It operates upon the principle of association, and thus seeks to give fidelity to the memory. These strings and belts were the only visible records of the Iroquois, and were of no use except by the aid of those special personages who could draw forth the secret records locked up in their remembrance."[1] There was, accordingly, a sachem specially constituted as "Keeper of the Wampum;" and verbal promises, interchanged either among themselves or with foreign tribes, were regarded as of little moment if no strings or belts had been employed to ratify them and secure their remembrance. Sir William Johnston records, as the result of his experience: "They regard no message or invitation, be it of what consequence it will, unless attended or confirmed by strings or belts of wampum, which they look upon as we our letters, or rather bonds."[2] A belt of wampum was also used at their festivals, when a council of repentance preceded the rejoicings, and public confession of faults, with the pledge of amendment, were put on record by its means; and strings of wampum still constitute the evidence of any special commission among the Indians of the Six Nations in Canada.

The resemblance between the two systems of the quipu and wampum, with their appointed keepers, and the perpetuation of the national chronicles and enactments by means of these as mnemonic guides, is so remarkable, as to appear highly suggestive of a common origin; however remotely we may be compelled to seek for that dividing line on which the essentially distinct elements of picture-writing and recording by an arbitrary association of ideas met, as it were, and exchanged their diverse modes of giving form and perpetuity to fleeting words. The picture-writing is of indigenous growth among the northern tribes, the quipu seems no less essentially native to Peru; but we are not without some faint indications of a source other than the northern forest Indian, from whence his mode of quipu-registering and ratification of contracts may have been derived; or rather perhaps, from whence the Indian tribes of the northern continent may have borrowed this product of the immature civilisation of the Peruvian Cordilleras. In the

[1] *League of the Iroquois*, p. 120.
[2] *Documents relating to Colonial History of New York*, vol. ii. p. 624.

sepulchral mounds of the Mississippi Valley, the relics of art present great uniformity of character; and among these, beads of shell, bone, and other materials, have been found in greater quantities than seems to be readily accounted for as mere personal ornaments. In the Grave Creek Mound, shell-beads, such as constitute the wampum of the forest tribes, amounted to between three and four thousand; and it seems singularly consistent with the partial civilisation of the ancient Mound-Builders, that in such deposits we have the relics of sepulchral records which constituted the scroll of fame of the illustrious dead, or copies of the national archives deposited with the great sachem to whose wisdom or prowess the safety of his people had been due. The wampum chronicle, unstrung by Time's decaying fingers, seems no unmeet inscription for the nameless dead over whom the great earth-pyramid was reared. The memories once associated with its many strings have irrecoverably passed away; yet not more so than the annals of the civilized Incas, stored up in their many-coloured skeins of knotted threads; or, even, perhaps, than the sculptured inscriptions of Copan or Palenque.

The Peruvian quipu served like an abacus, for facilitating the most elaborate computations of the census, revenues, and official registers of the Incas; and in its northern form of bead-wampum it may have equally sufficed for determining the mensuration of the great earthworks. But one other element of parallelism in the civilisation of the Mound-Builders and Peruvians is the apparent possession by both of the balance and recognised standards of weight. This is at least suggested by repeated discoveries of penannular copper rings, in sepulchral mounds and on the mound-altars, which correspond not only in size but in weight. In diameter they measure 2·9 inches; in thickness 0·4; and when perfect weigh exactly four ounces each. Examples have not, indeed, been found as yet, in sufficient numbers to establish the fact; but the inference is one perfectly consistent with other traces of the civilisation of the Mound-Builders, and may be confirmed by further discoveries. Ten copper rings thus uniform in weight and dimensions lay in two heaps of five each, on an altar under one of the sacrificial mounds in the Scioto Valley, tempting us to recognise in their numbers, the possible memorials of a decimal system of numeration.

CHAPTER XIX.

ANTE-COLUMBIAN TRACES.

THE LANDING OF COLUMBUS—THE LOST ATLANTIS—AMERIGO VESPUCCI—COLONIZATION OF GREENLAND—DISCOVERY OF VINLAND—EVIDENCE OF THE SAGAS—TRACES OF THE NORTHMEN—RUNIC INSCRIPTIONS—THE KINGIKTORSOAK TABLET—THE IGALIKKO INSCRIPTION—THE IKIGEIT SEPULCHRAL SLAB—CHARACTERISTIC GRAPHIC RECORDS—THE DIGHTON ROCK—THE PHŒNICIANS IN AMERICA—NEW ENGLAND ANTIQUARIES—THORFINN'S RUNIC RECORD—THE MONHEGAN INSCRIPTION—THE GRAVE CREEK STONE—ITS ALPHABETIC CHARACTERS—ASSIGNED DATE—LIBYAN THEORIES—OTHER AMERICAN INSCRIPTIONS—INSCRIBED AXE-BLADES—ENGRAVED AZTEC HATCHET—FIGURED STONE SPHERE—PERFORATED STONE CYLINDERS—THE CINCINNATI TABLET—THE ROUND TOWER OF NEWPORT—THE ALABAMA STONE—NO MEMORIALS LEFT, OF COLONIZATION BY NORTHMEN.

THE year 1492 marks in many important respects the close of the Old World's ancient, the beginning of its modern history. But for the native of the Transatlantic hemisphere it is the dawn of all definite annals. It constitutes for America what the era of Julius Cæsar's landing is for Britain: the lifting of the veil behind which lay unrecorded centuries of national story, and the admission into the great family of nations of those who there, isolated and apart, had through unnumbered generations enacted the drama of history.

In previous chapters some attempt has been made to look upon that past, which, though relatively speaking so modern, is nevertheless remoter from all our preconceived ideas and sympathies than the old Roman world. The fifteenth century is, in fact, as ancient for America as the first century is for Britain, or B.C. 2000 for Egypt. No wonder, therefore, that every glimpse of a fancied memorial of ante-Columbian relations with the Old World should present a fascinating charm to the American archæologist; or that even a pardonable credulity should occasionally be exercised in the reception of any apparent evidence of such intrusive antiquities disclosing themselves among relics of aboriginal native arts. But to the impulse awakened by the ambition to resuscitate the long-buried past, has been added the no less influential stimulus of

national pride and emulation, both in the Old and the New World. To such combined motives we owe in an especial manner, not only the *Antiquitates Americanæ*, and the *Grönland's Historiske Mindesmærker* of the Danish antiquaries; but also a singular harvest reaped on American soil, from the novel impetus to which the former of these publications has given rise. The idea of ancient intercourse between America and Europe is not indeed of such recent growth. It mingles with the earliest study of Mexican antiquities, and was indeed inseparable from that recognition of the American race, as in the strictest meaning of the term of one blood with the whole human family, which has only been seriously challenged within very recent years. One favourite idea, accordingly, long found acceptance, which traced the peopling of the American continent to the ten tribes of Israel; and discovered in the Indian languages Hebrew words and idioms, and analogies to Jewish ceremonial rites in native customs. Still older traces have been sought in the lost Island of Atlantis; in the obscure allusions of Herodotus, Plato, Seneca, Pliny, and other classical writers, to islands or continents in the Ocean which extended beyond the western verge of their world; in the Punic expedition, by the Atlantic, to the Indian Ocean, accredited to Hanno; and the circumnavigation of Africa by the way of the Red Sea, assigned to Phœnician mariners by Pharaoh-Necho, upwards of 2000 years before Vasco de Gama rounded the Cape; in the Ophir, to which the ships of Tyre, manned by servants of Hiram, "that had knowledge of the sea," sailed for gold and algum trees, for Solomon's great works; in the Antilla mentioned by Aristotle as a Carthaginian discovery; and in that other obscure island which Diodorus Siculus assigns to the same voyagers, as a secret reserved for their own behoof, should fate ever compel them to abandon their African homes.

This at least may be inferred from numerous allusions of classic authors, that the maritime nations of the Mediterranean were accustomed from a remote period to navigate the ocean which stretched away in undefined vastness from the western bounds of the European and African continents. It follows from such Atlantic voyages, not only that Madeira, the Canary, and Cape Verde Islands, but even the Azores, may have been among the Phœnician and Punic discoveries referred to by Aristotle, Pliny, and others. Humboldt, indeed, assigns reasons, satisfactory to his own mind, for believing that the Canary Islands were known, not only to the Phœnicians and Carthaginians, but also to the Greeks

and Romans, and, "perhaps even to the Etruscans." Northward to the Tin Islands of the English Channel, as well as southward beyond Cape Verde, across the stormy Bay of Biscay and the Gulf of Guinea, ancient voyagers from the Mediterranean sailed into the wide waste of the Atlantic; and from our knowledge of the winds and currents of that ocean, it is no inconceivable thing that some of those venturous voyagers should have been driven out of their course, and landed on more than one point of the American continent. To such an accidental landing America may be said to owe its name. Pedro Alvares de Cabral, sailing in command of a Portuguese fleet in the last year of the fifteenth century, on the eastern route just rediscovered by Vasco de Gama, was carried by the equatorial current so far to the west of his intended course that he found himself unexpectedly in sight of land, in 10° S. latitude, thereby discovering Brazil. The king of Portugal thereupon despatched the Florentine, Amerigo Vespucci, who explored the coast, prepared a map of it, and thereby achieved the honour, more justly due to Columbus, of giving his name to the new continent. So recently as 1833 the wreck of a Japanese junk on the coast of Oregon showed how, in like manner, across the wider waste of the Pacific, the natives of the Old World may have been borne to plant the germs of a new population, or to leave the memorials of Asiatic civilisation on American shores.

It is not, therefore, altogether without reason that the vague references of classic writers to lands lying beyond the Pillars of Hercules have had an exaggerated value assigned to them. The conviction of some ancient intercourse between the Old World and the New has furnished a fruitful theme for speculation, almost from the year in which the Genoese voyager achieved his long-cherished dream of discovery. It has only required the asserted recovery of Egyptian, Phœnician, or Punic traces of graphic or plastic art, to revive the faith in an American commonwealth old as that Atlantis which the Egyptian priesthood told of to Solon as even then among the things of an ancient past.

Such speculations have been discussed in all their changing forms, and investigated with loving enthusiasm, though ever proving intangible when pressed to any practical deduction. In Humboldt's *Researches* is engraved a fragment of a supposed inscription, copied by Ranson Bueno, a Franciscan monk, from a block of granite which he discovered in a cavern in the mountain chain between the Orinoco and the Amazon. Unfortunately, Humboldt was unable to inspect it for himself. Possibly it would have

proved only the natural markings of graphic granite. He remarks of the copy furnished him by the monk: "Some resemblance to the Phœnician alphabet may be discovered in these characters, but I much doubt whether the good monk, who seemed to be but little interested about this pretended inscription, had copied it very carefully." Not much could be made out of "Phœnician" characters heralded in this fashion. But the appearance in 1837 of the *Antiquitates Americanæ, sive scriptores septentrionales rerum ante-Columbiarum in America*, issued by the Royal Society of Northern Antiquaries at Copenhagen, under the learned editorship of Professor Charles Christian Rafn, produced an entire revolution, alike in the form and the reception of illustrations of ante-Columbian American history. While the publication of that work gave a fresh interest to the vaguest intimations of a dubious past, it seemed to supersede them by tangible disclosures, which, though "but of yesterday" in comparison with such mythic antiquities as the Egyptian Atlantis, nevertheless added some five centuries to the history of the New World. From its appearance, accordingly, may be dated the systematic resolve of American antiquaries and historians to find evidence of intercourse with the ancient world prior to that recent year of the fifteenth century in which the ocean revealed its great secret to Columbus.

From the literary memorials of the old Norsemen, thus brought to light, we glean sufficient evidence to place beyond doubt, not only the discovery and colonization of Greenland, by Eric the Red—apparently in the year 985,—but also the exploration of more southern lands, some of which, we can scarcely doubt, must have formed part of the American continent. Of the authenticity of the manuscripts from whence these narratives are derived there is not the slightest room for question; and the accounts which some of them furnish are so simple, natural, and devoid of anything extravagant or improbable, that the internal evidence of genuineness is worthy of great consideration. The exuberant fancy of the Northmen, which revels in their mythology and songs, would have constructed a very different tale had it been employed in the invention of a southern continent for the dreams of Icelandic and Greenland rovers. Some of the latter Sagas do, indeed, present so much resemblance in their tales of discovery to those of older date, as to look like a mere varied repetition of the original narrative with a change of actors, such as might result from different versions of an account transmitted for a time by oral tradition before being

committed to writing. But, with all reasonable doubts as to the accuracy of details, there is the strongest probability in favour of the authenticity of the American Vinland of the Northmen.

About the year 1000 — when Saint Olaf was introducing Christianity into the Norse fatherland, — Leif, a son of Eric, the founder of the first Greenland colony, is stated in the old Eric Saga to have sailed from Ericsfiord or other Greenland port, in quest of southern lands already reported as seen by Bjarni Herjulfson. Pursuing his voyage of discovery, Leif landed on a barren coast where a great plain covered with flat stones stretched from the sea to a lofty range of ice-clad mountains. To this he gave the name of Helluland, from *hella*, a flat stone; and the modern Danish editor conceives he finds in such characteristics evidence sufficient to identify it with Newfoundland. The next point touched presented a low shore of white sand, and beyond it a level country covered with forest, to which the name of Markland, or Woodland, was given. This, which, so far as the name or description can guide us, might be anywhere on the American coast, is supposed by the editor of the *Antiquitates Americanæ* to have been Nova Scotia. The voyagers, after two more days at sea, again saw land; and of this the only characteristic, that the dew upon the grass tasted sweet, has been assumed as sufficient evidence that Nantucket, where honey-dew abounds, is the place referred to. Their further course shoreward, and up a river into the lake from which it flowed, is supposed to have been up the Pacasset River to Mount Hope Bay; and there the voyagers passed the winter. After erecting temporary lodgings, Leif divided his followers into two parties, which alternately proceeded on exploring excursions. One of these, Tyrker, a southerner,—*sudrmadr*, or German, as he is supposed to have been,—having wandered, he reported on his return the discovery of vines and grapes such as he had been familiar with in his own Rhine-land. With these, accordingly, the vessel was laden, and Leif commemorated the discovery by giving to the locality the name of Vinland.

The same narrative reappears in Sagas of later date, with slight variations and some inconsistencies, but the local features described are equally vague; and it depends much more on geographical probabilities than on any direct evidence furnished either in the account of Bjarni Herjulfson's voyage, or in the somewhat more definite story of Leif Ericson, if we concur in the assumption of their modern editor that in these we have the earliest records of

the discovery of Newfoundland, Nova Scotia, Massachusetts, Rhode Island, Long Island, and Connecticut. In a subsequent brief *résumé* of the subject, Professor Rafn remarks: "It is the total result of the nautical, geographical, and astronomical evidences in the original documents, which places the situations of the countries discovered beyond all doubt. The number of days' sail between the several newly-found lands, the striking description of the coasts, especially the white sand-banks of Nova Scotia, and the long beaches and downs of a peculiar appearance on Cape Cod (the *Kialarnes* and *Furdustrandir* of the Northmen), are not to be mistaken. In addition hereto we have the astronomical remark that the shortest day in Vinland was nine hours long, which fixes the latitude of 41° 24′ 10″, or just that of the promontories which limit the entrances to Mount Hope Bay, where Leif's booths were built, and in the district around which the old Northmen had their head establishment, which was named by them *Hóp*." This nautical and astronomical evidence, however, is far from being so precise as the geographical deductions imply. Montgomery, in the notes to his *Greenland*, observes: "Leif and his party wintered there, and observed that on the shortest day the sun rose about eight o'clock, which may correspond with the forty-ninth degree of latitude, and denotes the situation of Newfoundland, or the River St. Lawrence." The data are the mere vague allusions of a traveller's tale; and it is indeed the most unsatisfactory feature of those Sagas that the later the voyagers, the more confused and inconsistent their narratives become on all points of detail. This is specially observable in reference to Thorfinn Karlsefne's expedition to Vinland, in the beginning of the eleventh century, "when the folks in Brattahlid began to urge greatly that Vinland the Good should be explored." He, too, visited Litla Helluland, or Newfoundland, and discovered Cape Sable Island, as is supposed; giving to it the name of Bjarney, or Bear Island, from a bear (*björn*) killed by some of his party there. Pursuing their coasting voyage, he and his company visited the same points seen before by Leif; gathered grapes, and also corn in Vinland; settled there for a time, and—as we shall find by and by,—left their mark behind them.

That voyagers from the Old World may long before have gazed on the same shores which first delighted the watchers from the deck of the "Santa Maria," on the 12th of October 1492, is by no means an improbable thing. The rude undecked "Pinta" and and "Niña," which, with the "Santa Maria," constituted the

squadron of Columbus, were certainly not better fitted to dare the broad Atlantic than the ships which bore to Tyre and Carthage the mineral wealth of the Kassiterides. Much less can it excite any reasonable doubt that the hardy Norse voyagers who made permanent settlements on the coasts and islands of the Mediterranean, established themselves in the Orkneys and the Hebrides, and discovered and colonized Iceland and Greenland, may have extended their exploratory voyages southward from the latter to the coasts of Newfoundland or the New England shores. The voyage from Greenland, or even from Iceland, to the coast of Maine, was not more hazardous or difficult than from the native fiords of the vikings to the coasts and islands of the Mediterranean. The wonder rather seems, that those whom the bleak northern ocean, and the dreary shores of Iceland, could not deter from discovery and permanent colonization; and to whose hardy endurance the icebound coasts of Davis Straits presented an aspect begirt with such attractions that they conferred on them the name of Greenland: should have failed, not only to discover, but permanently to colonize the Atlantic shores of the New World with the same indomitable adventurers who supplanted the Franks of Gaul, and conquered the Saxons of England.

The question naturally suggests itself to the mind, after dwelling on earlier or later glimpses of such ante-Columbian explorers: Has no memorial of ancient Phœnician or Carthaginian, Egyptian, Greek, or younger Norse voyager, survived as a voice from the past, to tell of such early intercourse between the Old World and the New? The presence of the pagan and Christian Norsemen is still attested in the British Isles by weapons, implements, sepulchral memorials, and above all by inscriptions. Norse runic inscriptions have been found even beneath the foundations of ancient London, mingling with its Roman, Saxon, and mediæval heirlooms. They have followed the Northmen to their Mediterranean homes; and Professor Rafn recently undertook the interpretation of an inscription in the same northern runes, on the marble lion of the Piræus, now at the Arsenal of Venice, which, among other Varangians in the service of the Greek Empire, commemorates, as he believed, the same Harold Hardrada, who fell at the battle of Stamford Bridge, A.D. 1066, to whom our Saxon Harold offered "seven feet of ground, or, since he was so tall, a few inches more!" Numerous similar inscriptions in the native land of the Northmen, preserve the memorials of their wanderings. These Norse adven-

turers are frequently designated *Englandsfari*, on account of their expeditions to England; one Icelander is specially styled *Rafn Hlymreksfari*, owing to his voyages to Iceland; nor was King Sigurd of Norway the only Norseman who won for himself the title of *Jórsolafari*, or traveller to Jerusalem.[1] Northern inscriptions repeatedly refer to adventures in "the western parts," meaning, however, in general the British Isles, where corresponding evidence proves their presence. Seventeen runic inscriptions, more or less perfect, still remain in the Isle of Man, to attest the presence of Norse colonists there, six or seven centuries ago. On Holy Island, in the Firth of Clyde,—where King Haco's fleet lay for some days after his defeat at Largs in 1263,—are still legibly graven the runic memorials of Amudar, Ontur, and Nicholas á Hæne, Norwegians, possibly of Haco's fleet. In Orkney, recently discovered runic inscriptions, remarkable for their character and extent, preserve literate memorials of adventurous Northmen from the tenth to the twelfth century, including those of the Jerusalem-farers, who, in 1153, followed Earl Ragnvald to the Holy Land; and precisely the same kind of evidence bears testimony to the existence of Norse colonies on the shores of Greenland, in the eleventh and twelfth centuries.

The precision and simplicity of such memorials of ancient Scandinavian colonization are worthy of note; for runic inscriptions are referred to by some assertors of their discovery in America, with about as definite a comprehension of what such really are, as that of the Mandan Indian, who, seeing an English traveller busy reading a newspaper, pronounced it to be a medicine for sore eyes. They are spoken of as though runic inscriptions were mysterious hieroglyphics; instead of being, as they are, records inscribed in a regular alphabet, and in a living language familiar to the student of Icelandic literature. The Greenland inscriptions, the work of contemporaries of Bjarni Herjulfson and Leif Ericson, are of this character; and therefore show us what we have to look for, should any such records survive to attest the visits of Northmen in the tenth and eleventh centuries, to Vinland, or other early discovered locality of the American continent. To the modern Norwegian and Dane, such memorials of the hardihood and enterprise of their Norse ancestry are full of interest; nor can we fail to sympathize in the gratification with which the Danish antiquary has recovered from the ice-bound coasts of Greenland,

[1] *Mémoires de la Société Royale des Antiquaires du Nord*, 1845-49, p. 334.

evidence of the presence of his Norse fathers there long prior to the era of Columbus. The Scandinavian characteristics of the Greenland tablets are unmistakable; but their minute correspondence to other graven memorials of the Norsemen, alike in their native land and in the later scenes of their wanderings in Europe, has not sufficed to prevent an over-credulous zeal from persuading itself into the belief that rude Indian tracings, if not also mere cracks and fissures of the natural rock, are graven inscriptions of such ante-Columbian voyagers.

The following is an accurate representation of the most re-

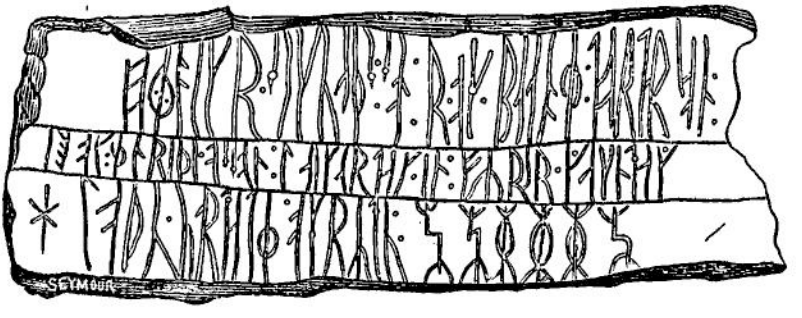


FIG. 45.—Kingiktórsoak Runic Inscription.

markable among the Greenland inscriptions, and will suffice, better than any description, to convey a correct idea of a genuine Norse runic tablet. It was found in 1824, on the Island of Kingiktórsoak, in Baffin's Bay, 72° 55′ N. lat., 56° 5′ W. long.; and is now preserved at Copenhagen. Of the genuine Norse characters and language of this inscription no doubt can exist. The only dubious points are the word *rydu*, variously rendered "cleared the ground," "explored," and "engraved;" and the concluding group of figures which follow it at the right-hand side of the lowest line, interpreted by Professor Rafn as the date 1135. Tied letters, or *binderuner*, are not less frequent in Runic than in Roman inscriptions. The only characters open to any difference of opinion here are at the commencement of the first and second lines. The first GV or GO, is of little moment as modifying the proper name *Guelligr* supposed by Professor Rafn to stand for Erling. The puzzling compound rune with which the second line begins is possibly only the terminal *r* of the *Tortarsonr*, as in the previous *Sigvathsonr*, both familiar Icelandic proper names. The whole forms a record of discovery entirely consistent with the spirit of the old Sagas:—

GOELLIGR SIGVATHSSONR OK BIANIE TORTARSON
R OK ENRITHI OSSON LAVGARDAG IN FYRIR GAKNDAG
HLOTHV VARDATE OK RYDV, MCXXXV.

i.e., *Elligr Sigvathson and Bjarni Tortarson, and Enrithi Odsson, on the seventh day before victory day,*[1] *raised these stones and explored,* [1135.] The interpretation of the final date is disputed, and is certainly open to question. If the correspondence of the two first characters with the last be allowed to be sufficiently close to admit of their being regarded as repetitions of the same figure, it will be observed that the intermediate ones also agree. Rendered on this principle into Roman numerals, it would be VVXXXV, or 1035. Dr. Brynjulfson of Iceland, who concurs in the interpretation otherwise, regards the supposed numerals as merely an ornamental completion of the line. Less room for any diversity of opinion exists in regard to a sepulchral slab graven in the same familiar runic characters, which was discovered at Igalikko, about nine miles from the Danish colony of Julianeshaab, in 1829. The legend is inscribed without any alphabetic complexities, on a thin slab of red sandstone; and reads with simple pathos as follows :—

FIG. 46.—Igalikko Runic Inscription.

VIGDIS M[AGNVS] D[OTTIR] HVILIR HER GLEDE GVTH SAL HENAR,

i.e., *Uigdis, Magnus' daughter, rests here; may God gladden her soul.* The abbreviated proper name *Magnus,* is necessarily conjectural now; though when the simple memorial of affection was reared, there was no need of more than the initial to preserve among the members of the little Greenland community the memory of Norse father and child. This monument indicates the recognition of the

[1] The day of victory (*Gagndag*, lit. gain-day), is stated by the Editor of the *Antiquitates Americanæ* to be an ancient festival of the Northmen, which fell on the 25th of April.

Christian faith, and the presence of Christian worshippers in Greenland, certainly not later than the twelfth century. A simpler memorial of the same kind is a wooden cross found in the cemetery of Herjulfsnes, with the single word MARIA carved in runic letters on one of its limbs. Such evidences of ancient Christian settlements on the shores of Greenland acquire an additional interest from associations, with the zeal of the Moravian missionaries of a later era; and the ruins of more than one early Christian church have been discovered, in confirmation of those proofs that Christianity was first transplanted to the New World by hardy Scandinavian voyagers from Norway and Iceland. One of these primitive ecclesiastical ruins—memorials alike of the pious zeal and the architectural skill of the first Norse colonists,—is a plain but tastefully constructed church of squared hewn stone, which stands nearly entire, though unroofed, at Kakortok, in the same district of Brattahlid, and only a few miles distant from Igalikko, where the sepulchral tablet of Vigdis was discovered. Numerous objects of less importance, including iron implements, pottery, fragments of church bells, etc., found in the same locality, throw additional light on the civilisation of the ancient colonists of Greenland, and indicate the traces to be looked for in proof of their settlement farther south on the American coasts. The latest in date of such literate memorials of the ancient Arctic colony is probably a sepulchral slab found in 1831, at Ikigeit, lat. 60° N. It is in Roman characters, though in the old Norse tongue. The letters are ranged in two lines, on either side of a plain cross cut on a slab of granite, one end of which, with a fragment of the inscription, is broken off. It furnishes this simple memento of the long-forgotten dead :—

HER ÞVILIR HRO[ALD]R KOLGRIMSS[ON]

i.e., *Here rests Roald the son of Kolgrim.*

The Norse colonies of Greenland, after being occupied, according to Norwegian and Danish tradition, from the tenth to the fifteenth century, were as entirely lost sight of as the mysterious Vinland of the Sagas; and when at length an interest in their history revived, much fruitless labour was expended in the search for a colony on the coast lying directly west from Iceland. Towards the middle of the seventeenth century, an oar was drifted on the Iceland coast, bearing this inscription in runic characters : OFT VAR EK ÞASA ÞUR EK ÞRO ÞHICK ; *Oft was I weary when I drew thee;* but it was not till the close of the following century that the traditions

of the ancient Greenland colonies began to excite renewed attention. Of the fabled charms of a Hesperian region discovered within the Arctic Circle, yet meriting by the luxuriance of its fertile valleys its name of Greenland, many a Norse legend pictured the enviable delights; and some of these, as well as the traditions of the lost Vinland, had been embodied by our English poet, James Montgomery, in the cantos of his *Greenland*, long before the *Antiquitates Americanæ* issued from the Copenhagen press.

The ancient Norsemen, the reputed discoverers of Vinland, and the explorers of Rhode Island and Massachusetts, are also affirmed to have pursued their explorations far beyond such accessible points, and to have acquired a knowledge of lands alike in the northern latitude of Wellington Channel, and on the coast of Florida.[1] We have seen the characteristics of their undoubted memorials on the Western shores of the Atlantic, and know what to look for on other sites. They were prone to leave such graphic records of their presence, and have transmitted the habit to their collateral descendants. Both the modern Englishman and the Anglo-American are notorious for the furor which finds its gratification in inscribing on the walls of temple or ruined tower, and on the remotest and most inaccessible cliffs, memorials of their presence. The pyramids, temples, and catacombs of the Nile Valley; the summits of the Alps, the Andes, and the Himalayas; cliffs of remotest Arctic and Antarctic regions; and all the more familiar and favourite haunts of modern travel, will tell to other ages of the wanderings of the venturous Briton and his sturdy American sons. But this craving for such fame is no Anglo-Saxon heritage. Anglo-Saxon runes are of the rarest occurrence in Britain, and nearly unknown beyond its limits; and Englishmen doubtless inherit this, as well as the spirit of maritime enterprise, and many other characteristic attributes of the modern stock, from their hardy Danelagh ancestry. The Norseman was proud of his

[1] In the sketch of the discovery of America by the Northmen already referred to, Professor C. C. Rafn adds:—"The Northmen were also acquainted with American land still farther to the south, called by them *Hvítramannaland* (the land of the White Men), or *Irland it Mikla* (Great Ireland). The exact situation of this country is not stated; it was probably North and South Carolina, Georgia, and Florida. In 1266, some priests at Gardar, in Greenland, set on foot a voyage of discovery to the Arctic regions of America. An astronomical observation proves that this took place through Lancaster Sound and Barrow's Strait to the latitude of Wellington's Channel. The last memorandum supplied by the old Icelandic records is a voyage from Greenland to Markland in 1347."

wanderings, and delighted to record explorations of far-distant regions, on his father's or his brother's *bautastene*. No wonder, therefore, when the antiquaries of Copenhagen were on the track of the long-lost Vinland, that they demanded of their American correspondents the production of monuments and inscriptions corroborative of the supposed ante-Columbian wanderings of Leif Ericson or Thorfinn Karlsefne, similar to those produced by themselves from Greenland. Nor were the modern Vinlanders less eager to respond. The Rhode Island Historical Society, replying through its learned secretary, did forthwith produce the required inscriptions and memorials: even to the famous "Danish Round Tower" at Newport, which the vulgar had been profane enough to reckon nothing more than an old windmill!

But the most memorable, if not notorious of all the so-called monuments of the Massachusetts Northmen is the famous Assonet or Dighton Rock, on the east bank of the Taunton river: a relic of considerable value in relation to our present inquiries. It might be assumed with much probability that investigations instituted fully three centuries after the opening up of regular intercourse between Europe and America would fail to discover, in the long-settled New England States, any memorials of older colonists; though such evidence may have been in existence at a time when the Pilgrim Fathers had other things to occupy their thoughts than the relics of imaginary predecessors. Anglo-Roman inscriptions, as we know, have been built into the masonry of ancient churches, mediæval strongholds, and even modern farm-houses. The islanders, who were thus indifferent to the memorials of older British colonists, were not likely, when transplanted to the wilds of the New World, to give greater heed to graven rocks, or such rudely inscribed runic slabs as Leif Ericson or Thorfinn Karlsefne may have left behind them. Such seemed a reasonable argument; but happily for us, the Dighton Rock supplies an unanswerable reply to any such assumptions, though not precisely in the form which some of its modern interpreters have assigned to it.

The history of this inscription is scarcely surpassed, in the interest it has excited, or the novel phases it has exhibited at successive epochs of theoretical speculation, by any Perusinian, Eugubine, or Nilotic riddle. When the taste of American antiquaries inclined towards Phœnician relics, the Dighton inscription conformed to their opinions; and with changing tastes it has proved equally compliant. In 1783 the Rev. Ezra Stiles, D.D., President

of Yale College, when preaching before the Governor and State of Connecticut, appealed to the Dighton Rock, graven, as he believed, in the old Punic or Phœnician character and language: in proof that the Indians were of the accursed seed of Canaan, and were to be displaced and rooted out by the European descendants of Japhet! "The Phœnicians," he affirms, "charged the Dighton and other rocks in Narraganset Bay with Punic inscriptions remaining to this day, which last I myself have repeatedly seen and taken off at large, as did Professor Sewell. He has lately transmitted a copy of this inscription to Mr. Gebelin of the Parisian Academy of Sciences, who, comparing them with the Punic palæography, judges them to be Punic, and has interpreted them as denoting that the ancient Carthaginians once visited these distant regions."[1] To this, accordingly, Humboldt refers, when he remarks: "The Anglo-American antiquaries have an inscription which they suppose to be Phœnician, and which is engraved on the Dighton rocks in Narraganset Bay, near the banks of Taunton River, twelve leagues south of Boston. From the end of the seventeenth century downward, drawings have been repeatedly made, but so dissimilar, that it is difficult to recognise them as copies of the same original. Count de Gebelin does not hesitate, with the learned Dr. Stiles, to regard these marks as a Carthaginian inscription. He says, with that enthusiasm which is natural to him, but which is highly mischievous in discussions of this kind, that this inscription has arrived most opportunely from the New World, to confirm his ideas on the origin of nations; and that it is manifestly a Phœnician monument. A picture in the foreground represents an alliance between the American people and the foreign nation, who have arrived by the winds of the north from a rich and industrious country."[2] Here, then, we perceive the very materials we stand in need of. Change but this *Punic* into a *Runic* inscription, and the winds of the north will fit the Scandinavian Icelanders far better than voyagers from the Mediterranean Sea. Humboldt, indeed, throws out the hint in a subsequent paragraph, which was ultimately turned to good account. But meanwhile let us retrace the history of this famous inscription.

So early as 1680, Dr. Danforth executed what he characterized as "a faithful and accurate representation of the inscription" on Dighton Rock. In 1712 the celebrated Dr. Cotton Mather procured drawings of the same, and transmitted them to the Secretary

[1] *Archæologia*, vol. viii. p. 291. [2] *Vues des Cordillères*, vol. i. p. 180.

of the Royal Society of London, with a description, printed in the *Philosophical Transactions* for 1714, referring to it as "an inscription in which are seven or eight lines, about seven or eight feet long, and about a foot wide, each of them engraven with unaccountable characters, *not like any known character.*" In 1730, Dr. Isaac Greenwood, Hollisian Professor at Cambridge, New England, communicated to the Society of Antiquaries of London a drawing of the same inscription, accompanied with a description which proves the great care with which his copy was executed. In 1768, Mr. Stephen Sewall, Professor of Oriental Languages at Cambridge, New England, took a careful copy, the size of the original, and deposited it in the Museum of Harvard University; and a transcript of this was forwarded to the Royal Society of London, six years later, by Mr. James Winthrop, Hollisian Professor of Mathematics. In 1786 the Rev. Michael Lort, D.D., one of the Vice-Presidents of the Society of Antiquaries of London, again brought the subject, with all its accumulated illustrations, before that learned society;[1] and Colonel Vallency undertook to prove that the inscription was neither Phœnician nor Punic, but Siberian.[2] Subsequently, Judge Winthrops executed a drawing in 1788; and again we have others by Judge Baylies and Mr. Joseph Gooding in 1790, by Mr. Kendall in 1807, by Mr. Job Gardner in 1812; and finally, in 1830, by a Commission appointed by the Rhode Island Historical Society, and communicated to the Antiquaries of Copenhagen with elaborate descriptions: which duly appear in their *Antiquitates Americanæ*, in proof of novel and very remarkable deductions.

Surely no inscription, ancient or modern, not even the Behistun cuneatics, or the trilingual Rosetta Stone, ever received more faithful study. After inspecting the rude scrawls of which it chiefly consists, it is pleasant to feel assured of this, at least: that when learned divines, professors, and linguists, thus perseveringly questioned this New England sphinx for upwards of a century and a half, we have good proof that no more valuable inscriptions have been allowed to perish unrecorded. But the most curious matter relating to this written rock is, that after being thus put to the question by learned inquisitors for a hundred and fifty years, it did at length yield a most surprising response. The description given by Professor Greenwood of his own process of copying, and by Professor Winthrop of the method pursued by his colleague, Mr. Sewall,—as well as the assiduity and zeal of other copyists,—would

[1] *Archæologia*, vol. viii. p. 290. [2] *Ibid.* p. 302.

under all ordinary circumstances have seemed to render any further reference to the stone itself superfluous. But no sooner do the Danish antiquaries write to their Rhode Island correspondents, with a hint of Leif Ericson and other old Norsemen's New England explorations, than the Dighton Rock grows luminous; and the Rhode Island Commission sends a new drawing to Copenhagen, duly engraved, with all the others, in the *Antiquitates Americanæ*, from which the learned Danes, Finn Magnusen, and Charles C. Rafn,—as indeed the most unlearned of English or American readers may,—discern the name of Thorfinn, with an exact, though by no means equally manifest enumeration of the associates who, according to the Saga, accompanied Karlsefne's expedition to Vinland, in A.D. 1007.

The annals of antiquarian exploration record many marvellous disclosures, but few more surprising than this. One could fancy the learned Dr. Danforth, or the painful Dr. Cotton Mather, responding with the delighted Antiquary, when Lovel—having, like our Rhode Island Commissioners, ascertained what to look for,—made out on the lintel of Monkbarns' postern the mitre of the venerable Abbot of Trotcosey: "*See what it is to have younger eyes!*" The inscription, as has been said, is readable by the most unlearned; for, notwithstanding sundry efforts in the pages of the *Antiquitates Americanæ* to discover runic characters, the letters which had so surprisingly come out on the oft-copied Dighton Rock, read in tolerably plain Roman capitals : : ORFINS. At the meeting of the American Association for the Advancement of Science, at Albany, in 1856, I had an opportunity of inspecting a cast of the Rock. No more confused and indistinct scrawl ever tried the eyes of antiquarian seer. Mine proved wholly unable to discern the invaluable holograph of the ancient Norse Columbus. Indeed, the indistinctness of the half-obliterated design, and the rough natural surface of the weathered rock on which the figures have been scratched with the imperfect tools of some Indian artist, abundantly account for the variations in successive copies, as well as for the fanciful additions which enthusiastic copyists have made out of its obscure lines.

Mr. Schoolcraft tested the significance of the inscription, by submitting a copy of it to Chingwauk, an Indian chief, familiar with the native system of picture-writing. The result was an interpretation of the whole as the record of an Indian triumph over some rival native tribe; and the conviction on Mr. Schoolcraft's

part that the graven rock is simply an example of Indian rock-writing, or *muzzinnabik*, attributable to the Wabenakies of New England.[1] In the engraving of 1790 an O R appears, which, in 1830, had expanded into Thorfinn, and his fifty-one followers. These Chingwauk could make nothing of, and hence Mr. Schoolcraft inferred that they were genuine additions, made by the Norsemen to an Indian record. But subsequent inspection of the original satisfied him that the runic or Roman characters are imaginary, and that the whole is of Indian origin; an opinion which General Washington is said to have expressed at Cambridge so early as 1789.

Such is the conviction reluctantly forced on the mind of the most enthusiastic believer in the ante-Columbian discovery and colonization of New England by the Northmen, in reference to this famous Dighton Rock, after all the fascinating glimpses of an American prehistoric era which the learning of Danish and other antiquaries had conjured up for his behoof. The runic records of the Dighton Rock, it may be presumed, have lost credit with every honest inquirer; not so, however, the traditions of the Northmen, or the faith in the discovery of some more credible memorial of their presence.

One of the latest discoveries of these supposed records of the Northmen was produced before the Ethnological section at the Albany meeting of the American Association, in 1856, by Dr. A. E. Hamlin, of Bangor, and is described in the printed Transactions.[2] The accompanying woodcut (Fig. 47) is copied from the cast, then

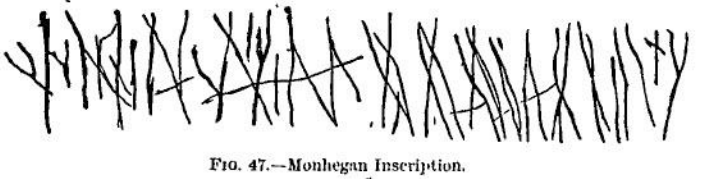


FIG. 47.—Monhegan Inscription.

exhibited, of this supposed runic inscription, which appears on a ledge of hornblende, on the Island of Monhegan, off the coast of Maine. Dr. Hamlin suggests that the inscription is the work of "some illiterate Scandinavian, whose knowledge of the runic form was very imperfect;" and he then proceeds to adduce reasons for assigning Monhegan, the Kennebec River, and Merry Meeting Bay,

[1] *History of the Indian Tribes*, vol. iv. p. 120, plate 14.

[2] *Proceedings of the American Association for the Advancement of Science*, 1856. *Philology and Ethnology*, p. 214.

as the true localities of Leif's wintering place in Vinland, instead of the previously assumed Pacasset River and Mount Hope Bay. Dr. Hamlin, however, duly forwarded a copy of the inscription to Copenhagen; and a version of it appears in the *Séance Annuelle du 14 Mai* 1859, bearing a very remote resemblance to the accompanying engraving of it, and looking a great deal liker runes than the original can possibly do. The Danish antiquaries on this occasion, however, abandoned the attempt at interpretation; though there is something amusing in the contrast between the New Englander's theory of an illiterate Norseman scrawling incomprehensible runic characters on the rock, and that of the Danish elucidator, who observes: "The Indians have, without doubt, profited in various ways by their intercourse with the Northmen, to whom they were probably indebted for much knowledge; and it is apparently to their instruction, acquired in this manner, that we owe several of their sculptures on the rocks which are met with in these regions."[1] The Monhegan inscription, thus bandied about between illiterate Northmen and Indians, is in irregular lines about six inches long, and runs obliquely across the face of a rock, where the general lines of horizontal stratification presented no impediment to its characters being placed in the usual upright position. It is just as truly a record in Scandinavian runes as that of the Dighton Rock. When properly classed, it will more probably take its place with the famous Swedish Runamo inscription, which, after its characters had been interpreted with wonderful minuteness, turned out to be only the natural markings on a block of granite.

Of a very different character is another inscription to which we now turn. If the "Grave Creek Stone" could be relied upon as a genuine relic, it would constitute the most remarkable of all the disclosures which explorations of the ancient mounds and earthworks of the New World have brought to light. Mr. Schoolcraft specially devoted himself to the elucidation of this marvellous inscription; and after corresponding on the subject with learned societies both in Europe and America, he finally placed it in his class of INTRUSIVE ANTIQUITIES. In the year 1838, soon after the publication of the *Antiquitates Americanæ*, the Grave Creek mound, on the banks of the Ohio River, was excavated by its proprietor, and converted into an exhibition. This mound, which is one of the largest on the continent, has already

[1] *Société Royale des Antiquaires du Nord*, 1859, p. 25.

been described; and its genuine characteristics are such as stand in no need of adventitious aid to confer a legitimate interest. But along with the shell-beads, copper bracelets, and other relics common to such sepulchral mounds, which were recovered in the course

FIG. 48.—Grave Creek Mound Inscription.

of the excavations, an inscribed oval disk of white sandstone—engraved here the same size from a wax impression of the original,—was produced as having been found near one of the skeletons at the base of the mound. The stone measures three-fourths of an inch in thickness, and is engraved with three lines of unknown characters, as shown above. It is unique among American graven or sepulchral relics. Of its genuineness Mr. Schoolcraft entertained not the slightest doubt; nor can he be considered unreasonably mysterious in the indications vouchsafed by him as to its ancient source. After corresponding with Professor Rafn of Copenhagen, M. Jomard of Paris, and other foreign and native scholars, he communicated an elaborate analysis of the inscription to the American Ethnological Society.[1] In this he shows that the cosmopolitan little disk of sandstone contains twenty-two alphabetic characters, four of which correspond with the ancient Greek, four with the Etruscan, five with the old Northern runes, six with the ancient Gaelic, seven with the old Erse, ten with the Phœnician, fourteen with the Anglo-Saxon,—or old British as it is somewhat oddly designated,—and sixteen with the Celtiberic; besides which, he adds, "possibly equivalents for these characters may be found in the old Hebrew:" a suggestion designed, no doubt, for those who may still have faith in the descent of the Red Men from the lost ten tribes. It thus appears that this ingenious little stone is even more accommodating than the Dighton Rock, in adapting itself to all conceivable theories of ante-Columbian colonization; and in fact constitutes

[1] *Transactions of the American Ethnological Society*, vol. i. p. 392.

an epitome of the prehistoric literature of the New World. Had Sir Henry Rawlinson dug up such an olio of all languages at one of the corners of the tower of Babel it might have less surprised us, than as the product of the great Virginian sepulchral mound.

This curious analysis, so contrary to all previous philological experience, does not seem to have staggered the faith of its elucidator, in this mound-inscription. That a series of simple linear alphabetic figures should be found to present certain analogies to runic and other alphabets, including even the cuneiform characters on the Assyrian marbles, will not, indeed, surprise any one who has made for himself the easy experiment of trying to invent a new series of combinations of lines and curves differing from such alphabets. But apart from internal evidence, the fact is notorious that Dr. James W. Clemens communicated to Dr. Morton all the details of the exploration of the Grave Creek mound, which appear in the *Crania Americana*, without any reference to the discovery of an inscribed stone. Nor was it till the excavated vault had been fitted up by its proprietor for exhibition to all who cared to pay for the privilege of admission, that the marvellous inscription opportunely came to light to add to the attractions of the show. Nevertheless, Mr. Schoolcraft's faith remained unchanged; and after raising the question of Phœnician, Iberian, Danish, or Celtic origin in his first paper on the subject, he thus summed up his matured views, in his *History of the Indian Tribes*:—"An inscription in apparently some form of the Celtic character came to light in the Ohio Valley in 1838. This relic occurred in one of the principal tumuli of Western Virginia (the ancient *Huitramannaland*). It purports to be of an apparently early period, viz., 1328. It is in the Celtiberic character, but has not been dociphered. Its archæology appears corroborative of the Cimbrian and the Tuscarora traditions, representing a white race in the ante-Columbian periods in this part of America."[1]

The genius of archæology might well lavish her favours more liberally on votaries who make so much out of her smallest contributions. The parenthetical introduction of Professor Rafn's *Huitramannaland* is a fine example of rhetorical allusion. The unhesitating determination of its inscription as in "*the* Celtiberic character" wonderfully simplifies previous alternatives; and it could never be surmised from his text, that the historian of the Indian Tribes assigns his precise date of 1328 on no better autho-

[1] *History of the Indian Tribes*, vol. iv. p. 118.

rity than the statement of Mr. Tomlinson, the proprietor of the mound, that the section of a large white oak on its summit disclosed about five hundred annual rings; which, supposing the oak to have taken root the very year of the mound's completion, and the rings to have been exactly the product of five centuries, would indicate the said date. Dr. Clemens, however, a more trustworthy witness, states the annual layers of the oak at three hundred, but says nothing about the inscription. But its alphabetic marvels were hailed with rapture by the wondering *savants* to whom they were submitted. The antiquaries of Copenhagen published a description of this "Runic inscription found in America;" hesitated as to its authors between "tribes from the Pyrenean Peninsula," and inhabitants of the British Isles; but apologized for qualifying with any possibility of doubt the certainty as to its being "of European origin, and of a date anterior to the close of the tenth century," because the European alphabets with which they had compared it are themselves of a more ancient Asiatic origin. They added, moreover, the somewhat dangerous hope, "that the numerous amateurs of antiquity in America may continue to exert themselves for the discovery of more monuments of such high value."[1]

Ancient European, then, the Virginian inscription is, unless it be still more ancient Asiatic. But Africa, too, has its champions. M. Jomard, President of the Geographical Society of Paris, pronounced the riddle to be Libyan; and his opinion has since met with independent confirmation. Mr. William B. Hodgson, formerly American Consul at Tunis, in his *Notes on Northern Africa*,[2] after discussing the vestiges of the ancient Libyan languages, and noticing certain Numidian inscriptions found at the oasis of Ghraat and elsewhere: proceeds to comment on the Grave Creek Stone as "an inscription found in the United States, and containing characters very similar to the Libyan;" and after detailing the discoveries in the mound, he thus exclaims: "Whence was the ivory brought? Who was the gorgeous chieftain whose engraved signet was found by his side? Did he come from the Canary Islands, where the Numidian language and characters prevailed? or from the land of the Celto-Iberians, whose writing was somewhat similar? Shall we recur to the lost Atlantis? Could any of the Carthaginian or African vessels, which usually visited the Fortu-

[1] *Mémoires de la Société Royale des Antiquaires du Nord*, 1840-44, p. 127.

[2] *Notes on Northern Africa, the Sahara and Soudan, in relation to the Ethnography, Languages, etc., of those Countries*, p. 44.

nate or Canary Islands, have been carried by accident to the New World? The peopling of America is quite as likely to be due to Africa and Europe as to Asia." Without attempting to determine the answer to his queries, Mr. Hodgson concludes that there is no apparent difficulty in supposing the inscribed stone to have been brought from Africa by accident or design. More recently Dr. Wills de Hass, an American archæologist, communicated to the American Ethnological Society an elaborate paper, which he intimates his intention of publishing, in proof of the authenticity of the Grave Creek Stone. Meanwhile we can only regret that a relic which, if genuine, is an object of just interest, should have been given to the world under such equivocal circumstances, and elucidated with so much indiscreet zeal.

The Virginian inscription is not, however, the sole example of graven characters found on the American continent in connexion with native antiquities. Dr. G. J. Farish of Nova Scotia, has sent me the facsimile of an inscription engraved in unknown alphabetic

FIG. 49.—Pemberton Inscribed Stone Axe.

signs on a quartzose rock, near the beach, at Yarmouth Bay. It consists of a single line of twelve regularly cut linear characters upwards of an inch high, which Dr. Farish assures me has been known for upwards of forty-five years, and repeatedly submitted to scholars in the hope of finding an interpreter. In 1859, Dr. John C. Evans of Pemberton, New Jersey, communicated to the American Ethnological Society an account of a stone axe inscribed in similar unknown characters, which had been recently ploughed up

on a neighbouring farm. The axe, which measures about six inches long by three and a half broad, is engraved here (Fig. 49), from a drawing furnished to me by Dr. Evans. Dr. E. H. Davis, after carefully examining the original, informs me that though the graven characters have been partially retouched in the process of cleaning it, their edges present an appearance of age consistent with the idea of their genuineness; and the circumstances attending its production furnish no grounds for suspecting its authenticity. Two of the characters are placed on one side, in the groove for the handle, the others apparently form a continuous line, running round both sides of the axe-blade, as extended here (Fig. 50). This is not, however, an altogether unique example of an engraved axe. The practice of decorating implements of the simplest forms with graven

Fig. 50.—Pemberton Axe Inscription.

and hieroglyphic characters has already been illustrated in one of the Carib shell-knives (Fig. 6) from Barbadoes.[1] Such devices probably indicate the dedication of the weapon or implement to some special and sacred purpose, such as the rites of Mexican sacrifice rendered so common.

Humboldt figures, in his *Vues des Cordillères*, a hatchet made of a compact feldspar passing into true jade (Fig. 51), obtained by him from the Professor of Mineralogy in the School of Mines at Mexico, with its surface covered with graven figures or characters. In commenting on this interesting relic, M. Humboldt adds: "Notwithstanding our long and frequent journeys in the Cordilleras of the two Americas, we were never able to discover the jade *in situ*; and this rock being so rare, we are the more astonished at the great quantity of hatchets of jade which are found on turning up the soil in localities formerly inhabited, extending from the Ohio to the mountains of Chili."[2] Here also, therefore, we have a glimpse of wide-spread trade and barter carried on throughout the American

[1] *Ante*, p. 136.

[2] *Vues des Cordillères*, vol. ii. p. 146, plate xxviii.

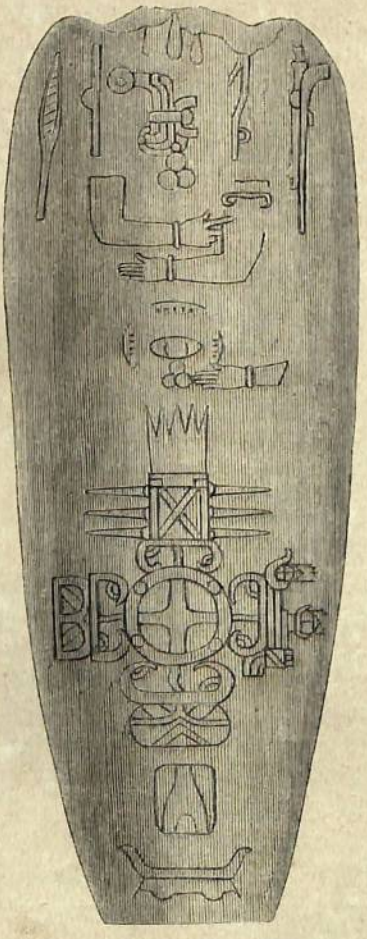


Fig. 51.—Engraved Aztec Hatchet

continent in ancient times, and of a wider intercourse, embracing both North and South America, than the investigators of the traces of former civilisation have been willing to recognise.

No relics are so fascinating in their promised disclosures of the past, or so justly entitled to value, as those graven with inscriptions, even in unknown characters. The Grave Creek Stone, Nova Scotian, and Pemberton wedge inscriptions, if genuine, altogether contradict the idea that "no trace of an alphabet existed at the time of the conquest of the continent of America."[1] The sole literate remains of Pelasgic Italy, found at Ægylla in Southern Etruria, do not greatly exceed in amount these supposed relics of America's forgotten tongues. Dennis gives a list of some thirty-six or thirty-seven words as the extreme limits of our knowledge of the Etruscan language. Even the precise value of its alphabet is not wholly determined; and the solitary inscription on the Perusinian pillar has supplied the chief materials for such linguistic inductions relative to the ancient Rasena, as the Eugubine tablets have done for the Umbrian. The doubt and confusion introduced into ethnographic inquiries by a single forgery are so mischievous, that the meekest conclave of scholars could scarcely be trusted with the functions of the American Judge Lynch against such an offender. Happily for science, the knowledge of the culprit is generally on a par with his morality.

Of another class of mound-disclosures, which gather their chief marvels under the light of modern eyes, one figured and described by Mr. Schoolcraft, in the *American Ethnological Transactions*, opens up, with the help of its ingenious interpreter, glimpses of ante-Columbian science, and of comprehensive significance in its graven devices, not less marvellous than the polyglot characters of the Grave Creek Stone. Having undertaken to treat, by an exhaustive process, "the Grave Creek Mound, the antique inscription discovered in its excavation, and the connected evidences of the occupancy of the Mississippi Valley during the Mound period, and prior to the discovery of America by Columbus," he introduces this subsidiary relic as a "figured stone sphere, an antique globe, the most important discovery in the minor mounds in its bearing on the inscription." It is a spherical stone, flattened on one side, and with no further characteristic of a globe about it than pertains to any schoolboy's marble. Sundry lines graven on it, as shown in the woodcut, form a lozenge, triangle, etc., suggesting no special appear-

[1] *Types of Mankind*, p. 283.

ance of art or mystery to the uninitiated eye. But here is what can be made of them, by one whose fancy has been stimulated to the degree requisite for interpreting their esoteric teachings:—

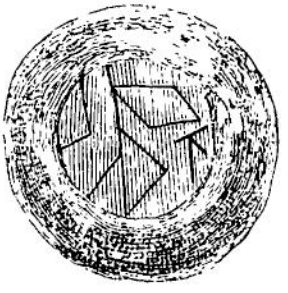


FIG. 52.—Graven Stone Sphere.

"The stone, which is a sphere, measures $4\frac{5}{10}$ inches in circumference. The inscription lines are enclosed in a circle of $\frac{8}{10}$ths; they are accompanied by a single alphabetic sign. It is the Greek Delta, which is also the letter T or D in several of the ancient alphabets. This character is also the letter Tyr, in the Icelandic Runic representing the god Tyr, or a bull. On the assumption that this inscription is geographical, it may be inquired whether it is a figure of the globe, denoting the divisions of land and water, or a minor portion of it. The ancients did not believe the world to have a spherical shape. Either the stone, therefore, is of an astronomical character, or is of a date subsequent to Copernicus; or it evinces that he was anticipated in the theory of convexity by the ancient Americans."[1] This inscribed stone sphere has attracted little attention compared with the "Grave Creek Stone;" but if the above alternatives logically exhaust the choice of inferential truths, it is surely the more marvellous relic of the two!

A like process is pursued with sundry other Mound relics. A stone ornamented with a simple pattern of alternate circles and squares, becomes a "heraldic record." "It may be regarded, perhaps, as astrological and genealogical, and as such, a memorial or species of arms of a distinguished person or family." Again, several perforated cylinders of soft steatite, found in one of the mounds, included a tube twelve inches long. This forthwith becomes a "telescopic device." The bore, which is four-fifths of an inch in diameter, diminishes at one end abruptly to one-fifth. "By placing the eye at this diminished point, the extraneous light is shut from the pupil, and distant objects are more clearly discerned. The effect is telescopic, and is the same which is known to be produced by directing the sight to the heavens from the bottom of a well, an object which we now understand to have been secured by the Aztec and Maia races, in their astronomical observations, by constructing tubular chambers."[2]

[1] *American Ethnological Transactions*, vol. i. p. 405.
[2] *Ibid.* vol. i. p. 406.

One other graven tablet from the mounds, discovered within the limits of Cincinnati, has been engraved in a previous chapter,[1] and a new hypothesis offered as to its original significance and object, which may perhaps appear little less fanciful than any of those noted here with reference to the relics of the ancient mounds. But apart from the question of its original use, its proprietor, Mr. Guest, remarked, in his first account of it, with equal justice and sagacity:—"The best evidence of its genuineness is this, that a person in our times could scarcely make so perfect an engraving as this, and not make it more perfect. The engraving represents something, whatever it is, the two sides of which are intended to be alike, and yet no two curves or lines are precisely alike; nor is there the least evidence of the use of our instruments to be discovered in the work. So difficult is it to imitate, with our cultivated hands and eyes, the peculiar imperfection of this cutting, that some excellent judges who at first doubted the genuineness of the relic, have changed their opinion upon trying to imitate it." Its graven device has been characterized as a hieroglyphic inscription, and its graduated lines have been interpreted to embody the record of a native calendar. But it presents nothing in common either with the alphabetic or hieroglyphic inscriptions of either hemisphere; and a careful study of its peculiarities leads me to suggest the idea that in it we possibly possess a scale of measurement used by the builders of the great geometrical earthworks of the Mississippi Valley.

Sober after-thought has led the antiquaries of Rhode Island so thoroughly to reject their older faith in the ante-Columbian relics of the district, attested by the Copenhagen authorities, that not only the Dighton Rock is in danger of being undervalued: but the famous Round Tower of Newport is unduly slighted, now that sceptics have robbed it of some six centuries of its reputed age. As a genuine American ruin of former generations, this old Tower forms an exceedingly attractive feature on Newport common; and the historical and poetical associations which have been ascribed to it by no means diminish its interest. When the Danish antiquaries were in search of relics of the long-lost Vinland, drawings of the Tower were despatched to them, and its authentication as an architectural monument of the Norse colonists of New England is unhesitatingly set forth in the supplement to the *Antiquitates Americanæ*.[2] The poet Longfellow, accordingly, assuming its

[1] Fig. 17, p. 221.

[2] *Antiquitates Americanæ*, Supplement, p. 18.

venerable origin, associated it with another discovery of so-called Norse relics, and made it the scene of his ballad on *The Skelcton in Armour*. But the modern Skald is not the less satisfied, for all purposes of sober prose, with the date of 1678, furnished by the will of Governor Arnold for his "stone-built windmill in ye town of Newport."

In the able and well-digested *résumé* of American archæology, prepared by Mr. Samuel F. Haven for the Smithsonian Institution, reference is made to the "Rutland Stone," an American counterpart to the famous Swedish Runamo Inscription, in its graphic freaks of natural crystallization.[1] Other inscriptions, not much more available for historical purposes, are produced by the same author in his review of the antiquities of the United States. Among these "The Alabama Stone" is an innocent piece of blundering, not without its significance. It was discovered near the Black Warrior river, upwards of thirty years ago, when no rumours of the old Northmen's visits to Vinland or Huitramannaland stimulated the dishonest zeal of relic-hunters; and its mysterious language, and remote ante-Columbian date, were only wondered at as an inexplicable riddle. As copied by its original transcribers, the inscription ran thus:—

HISRNEHNDREV.
1232.

Had this inscription turned up opportunely in 1830, when the antiquaries of New England were in possession of a roving commission on behoof of Finn Magnussen and other Danish heirs and assignees of old Ari Marson, who knows what might have been made of so tempting a morsel? From the *Annales Flateyenses*, we learn of "Eric Grœnlandinga biskup," who in A.D. 1121 went to seek out Vinland; and in the following century, the *Annales Holenses*, recovered by Torfæus from the episcopal seat of Holum in Iceland, supply this tempting glimpse: "*faunst nyja land*," *i.e.*, new land is found. With such a hint, what might not learned ingenuity have done to unriddle the mysteries of the New World in the year of grace 1232? Unhappily, its fate has been to fall into the hands of Mr. Haven for literary editing, which he does in this unromantic fashion: "We have before us the Alabama Stone found some thirty years ago near the Black Warrior river. To our eyes, it reads HISPAN · ET · IND · REX as plainly as the same inscrip-

[1] *The Archæology of the United States*, p. 132.

tion on a Spanish quarter of a dollar somewhat worn. The figures may be as above represented, but of course they cannot be intended for a date," unless indeed it be 1532. Earlier dates occur on genuine inscribed memorials of the old Spanish Hidalgos' presence in the New World, of which the Manlius Stone is perhaps the most interesting, on account of the locality where it was found.

This stone was discovered about the year 1820, in the township of Manlius, Onondaga County, New York, by a farmer, when gathering the stones out of a field on first bringing it into culture. It is an irregular spherical boulder about fourteen inches in diameter, now deposited in the museum of the Albany Institute. On one side, which is smooth and nearly flat, is the inscription :

Leo . De	L . . 11
VI. 1520	X

with the device of a serpent twining round the branch of a tree. Like most other American relics of this class, it has been tortured into interpretations not very easily discernible by ordinary processes of rendering such simple records.[1] Apart, however, from any attempted identification of the object of the memorial, it is a relic of considerable interest. No reasonable grounds exist for questioning its genuineness; and we are thus supplied with an inscription of a date within twenty-eight years of the first landing of Columbus on the mainland. But a discovery of this nature, associated with the earliest known period of European exploration of the American continent, in a northern locality so remote from the sea-coast, when taken into consideration along with the authentic traces of older Norse settlements still discoverable in Greenland, is calculated to confirm the doubts of any Scandinavian colonization of Vinland in the ages before Columbus. That the Northmen visited some portions of the American coasts appears to be confirmed by credible testimony. But, if so, their presence was transient; they left no enduring evidence of their visits; and to Spanish pioneers of American discovery and civilisation, subsequent to the era of Columbus, we must look for the earliest memorials of European adventure in the New World.

Such is a concise review of the evidence of intercourse between the Old and the New World prior to the voyage of Columbus in 1492, and of the monumental or graven relics which seem to furnish any traces of an ante-Columbian civilisation in America other-

[1] Schoolcraft's *Notes on the Iroquois*, p. 326. *Proceedings of American Antiq. Soc.*, April 1863, p. 33 ; &c.

wise than of native growth. The early traces of European presence subsequent to that date are chiefly of value, as justifying the anticipation of the discovery of some corresponding evidence of still older colonization, if such had ever existed. The results, however, restore to vague conjecture all ancient colonization or discovery of the continent of America, except in so far as the Sagas of the Northmen furnish trustworthy indications that the first colonists of Iceland and Greenland coasted the North American shores, and gathered the grapes of New England six hundred and twenty-six years before the Pilgrim Fathers effected their settlement amid the primeval forests of the New World. But if so, the glimpses they obtained were transient. The hardy Northmen who dictated terms to the heir of Charlemagne, planted their flourishing republic on the shores of Iceland, and colonized the wintry realms of Greenland, seemed equally fitted to secure for themselves the triumphs of Columbus, Cabot, and Cortes. And how would the whole course of the world's history have been changed had Leif Ericson and Thorfinn proved the Pilgrim Fathers of New England! But it was not so to be; and the fruitless search which has been so zealously pursued in the hope of recovering some trace of the presence of Scandinavian colonists on the site of the mysterious Vinland; or of still older Egyptian, Phœnician, Greek, or Punic wanderers landed by choice or chance along the American shores: has served only to place beyond doubt that if any such did precede Columbus in his great discovery, they turned their visit to no permanent account, and have left no memorials of their premature glimpse of the Western Hemisphere.

CHAPTER XX.

THE AMERICAN TYPE.

THE RACE OF GUANAHANE—FIRST INDIANS IN EUROPE—A DISTINCT RACE OF MEN—VIEWS OF DR. MORTON—THE AMERICAN CRANIAL TYPE—EXCEPTIONAL VARIETIES—VIEWS OF AGASSIZ—MORTON'S BARBAROUS NATIONS—OTHER OBSERVERS—CANADIAN CRANIA—DEVIATIONS FROM NORMAL TYPE—THE ALLEGHANS—THE SOIOTO MOUND SKULL—GENERAL FORMULÆ—THE CHEROKEE HEAD—THE GRAVE CREEK MOUND SKULL—MOUND AND CAVE CRANIA—THE PERUVIANS AND MEXICANS—PERUVIAN SEPULTURE—A PERUVIAN TOMB—FEMALE MUMMY—THE MANO COLORADO—SEPULCHRAL RELICS—INFANT MUMMIES—PERUVIAN HEAD-FORMS—RELATIVE CEREBRAL CAPACITY—MORTON'S FINAL VIEWS—DOLICHOCEPHALIC PERUVIAN HEAD—ARTIFICIAL COMPRESSION—PERUVIAN INFANT SKULLS—THE NORMAL HEAD—THE ABNORMAL HEAD—PERUVIAN DOLICHOCEPHALIC CRANIA—EMBALMED HEAD—ORIGIN OF EMBALMING—SOURCES OF EVIDENCE—GEOGRAPHICAL PHASES OF CIVILISATION—MEXICAN DOLICHOCEPHALIC CRANIA—MEXICAN BRACHYCEPHALIC CRANIA—THE TOLTECAN FAMILY—DIVERGENT HEAD-FORMS—THEORETICAL TYPE—IROQUOIS AND ALGONQUINS—THE ALGONQUIN STOCK—UNSTABLE CONDITIONS OF LIFE—CANADIAN CRANIA—SIGNIFICANCE OF OCCIPITAL FORMS—WESTERN CANADA—THE HURON COUNTRY—THE IROQUOIS STOCK—ALGONQUIN CRANIA—NATICK INDIANS—NEW ENGLAND CRANIA—ALGONQUIN LENAPE CRANIA—DIVERSITIES OF PHYSICAL CHARACTER—THE ESQUIMAUX HEAD—ELEMENTS OF COMPARISON—ESQUIMAUX CRANIA—THE TSCHUKTCHI HEAD—TSCHUKTCHI CRANIA—THE ESQUIMAUX AREA—MEAN CRANIAL MEASUREMENTS—RESULTS OF COMPARATIVE ANALYSES—AMERICAN ETHNIC UNITY—OPINIONS OF OBSERVERS—THE MONGOLIAN ETHNIC CENTRE.

THE unsuccessful search after traces of an ante-Columbian intercourse with the New World, suffices to confirm the belief that, for unnumbered centuries throughout that ancient era, the Western Hemisphere was the exclusive heritage of nations native to its soil. Its sacred and sepulchral rites, its usages and superstitions, its arts, letters, metallurgy, sculpture, and architecture, are all peculiarly its own; and we must now direct our attention to the physical characteristics which mark the American type of man; and endeavour to ascertain what truths may be recoverable from that source, relative to the origin, mutual influences, or essential diversities, pertaining to the civilized nations and barbarous tribes, and confederacies of the continent.

Among the various grounds on which Columbus founded his

belief in the existence of a continent beyond the Atlantic, special importance was attached to the fact that the bodies of two dead men had been cast ashore on the island of Flores, differing essentially in features and physical characteristics from any known race. When at length the great discoverer of the Western World had set his foot on the islands first visited by him, the peculiarities which marked the gentle and friendly race of Guanahanè were noted with curious minuteness; and their "tawny or copper hue," their straight, coarse, black hair, strange features, and well-developed forms, were all recorded as objects of interest by the Spaniards. On his return, the little caravel of Columbus was freighted not only with gold and other coveted products of the New World, but with nine of its natives, brought from the islands of San Salvador and Hispaniola: eight of whom survived to gaze on the strange civilisation of ancient Spain, and to be themselves objects of scarcely less astonishment than if they had come from another planet. Six of these representatives of the western continent, who accompanied Columbus to Barcelona, where the Spanish court then was, were baptized with the utmost state and ceremony, as the first-fruits offered to Heaven from the new-found world. Ferdinand and the enthusiastic and susceptible Isabella, with the Prince Juan, stood sponsors for them at the font; and when, soon after, one of them, who had been retained in the prince's household, died, no doubt as to their common humanity marred the pious belief that he was the first of his nation to enter heaven.

Such was the earliest knowledge acquired by the Old World of the singular type of man generically designated the Red Indian; and the attention which its peculiarities excited, when thus displayed in their fresh novelty, has not yet exhausted itself, after an interval of upwards of three centuries and a half. That certain special characteristics in complexion, hair, and features, do pertain to the whole race or races of the American Continent, is not to be disputed. Ulloa, who spent ten years in the provinces of Mexico, Columbia, and Peru, says: "If we have seen one American, we may be said to have seen all, their colour and make are so nearly alike."[1] Remarks involving the same idea have been recorded by other travellers; and have been subsequently quoted, with a comprehensive application undreamt of when they were uttered. In the sense in which the remark of Ulloa was made, relative to the tribes now occupying the tropical regions of the continent, of which alone he spoke from personal observation, there is nothing specially

[1] *Chronica del Peru*, parte i. c. 19.

to challenge; but that which was originally the mere generalization of a traveller, has been quoted as though it involved an unquestionable dogma of science. Various causes, moreover, have tended to encourage the development of scientific theory in this direction; so that, with the exception of the Esquimaux, the universality of certain physical characteristics peculiar to the tribes and nations of America, has been assumed by American ethnologists as an absolute postulate for the strictest purposes of scientific induction; and is reaffirmed dogmatically, in the words of Ulloa: "*He who has seen one tribe of Indians, has seen all.*"

An idea which embraces in a simple form the solution of many difficulties, is sure to meet with ready acceptance. This one, accordingly, which affirms certain homogeneous physical characteristics to be constant throughout the American races, has been adopted, for the most part, without inquiry; and opinions based on its assumption have been reproduced in confirmation of its truth. Robertson, the historian, affirms of the Esquimaux, that they "are manifestly a race of men distinct from all the nations of the American continent, in language, in disposition, and in habits of life. But," he adds, "among all the other inhabitants of America there is such a striking similitude in the form of their bodies and the qualities of their minds, that, notwithstanding the diversities occasioned by the influence of climate, or unequal progress of improvement, we must pronounce them to be descended from one source."[1] In this, however, the historian is merely generalizing from the observation of others; and it may even be questioned if he attached any very definite idea to this assumed descent of the whole American nations from one common source. But when a similar opinion is advanced on the authority of a scientific traveller, who combined the results of varied knowledge and profound philosophical speculation with conclusions derived from his own personal observations, it acquires claims to higher consideration and value. "There is no proof," says Humboldt, in the introduction to his *Researches*, "that the existence of man is much more recent in America than in the other hemisphere. . . . The nations of America, except those which border on the polar circle, form a single race, characterized by the formation of the skull, the colour of the skin, the extreme thinness of the beard, and straight glossy hair." But this statement has been reproduced to sustain views which the accompanying remarks entirely contradict; for, as will be afterwards noted, in the very next sentence Humboldt dwells on the striking resemblance which

[1] Robertson's *America*, B. IV.

the American race bears to the Asiatic Mongols, and refers to the transitional cranial characteristics which constitute links between the two.

"Few and partial exceptions can be quoted to the general unanimity of American writers—some of them justly regarded as authorities in ethnology,—in reference to this view of the nations of the whole American continent, north and south. With the solitary exception of the Esquimaux, they are affirmed to constitute one nearly homogeneous race, varying within very narrow limits from the prevailing type; and agreeing in so many essentially distinctive features, as to prove them a well-defined species of the genus *Homo*. Lawrence, Wiseman, Agassiz, Squier, Gliddon, Nott, and Meigs, might each be quoted in confirmation of the prevailing uniformity of certain strongly-marked cranial characteristics; but the source of all such opinions is the justly distinguished author of the *Crania Americana*, Dr. Morton, of Philadelphia. His views underwent considerable modification on points relating to the singular conformation observable in certain skulls found in ancient American graves, especially in reference to the influence of artificial means in perpetuating changes from the normal type; but the tendencies of his matured opinions all went to confirm his original idea of universal approximation to one type throughout the New World. The final results of his examination of a greatly extended series of Peruvian crania are thus clearly defined: "I at first found it difficult to conceive that the original rounded skull of the Indian could be changed into this fantastic form, and was led to suppose that the latter was an artificial elongation of a head remarkable for its length and narrowness. I even supposed that the long-headed Peruvians were a more ancient people than the Inca tribes, and distinguished from them by their cranial configuration. In this opinion I was mistaken. Abundant means of observation and comparison have since convinced me that all these variously-formed heads were originally of the same rounded shape."

Such are the latest views of Dr. Morton, as set forth in his posthumous paper on "The Physical Type of the American Indians." In that same final contribution to his favourite science, Dr. Morton's matured views on the cranial type of the American continent—based on evidence accumulated in the interval of twelve years which elapsed between the publication of the *Crania Americana* and the death of its author,—are thus defined: "The Indian skull is of a decidedly rounded form. The occipital portion is flattened in the upward direction, and the transverse diameter, as measured between

the parietal bones, is remarkably wide, and *often exceeds the longitudinal line.*[1] The forehead is low and receding, and rarely arched, as in the other races,—a feature that is regarded by Humboldt, Lund, and other naturalists, as a characteristic of the American race, and serving to distinguish it from the Mongolian. The cheek-bones are high, but not much expanded; the maxillary region is salient and ponderous, with teeth of a corresponding size, and singularly free from decay. The orbits are large and squared, the nasal orifice wide, and the bones that protect it arched and expanded. The lower jaw is massive, and wide between the condyles; but, notwithstanding the prominent position of the face, the teeth are for the most part vertical."[2] The views thus set forth by him who has been justly designated "the founder of the American School of Ethnology,"[3] have been maintained and strengthened by his successors; and scarcely any point in relation to ethnographic types has been more generally accepted as a recognised postulate, than this approximative cranial uniformity of the whole American race.

The comprehensive generalization of the American cranial type, thus set forth on such high authority, has exercised an important influence on subsequent investigations relative to the aborigines of the New World. It has, indeed, been accepted with such ready faith as a scientific postulate, that Agassiz, Nott, Meigs, and other distinguished physiologists and naturalists, adopted it without question; and have reasoned from it as one of the few well-determined data of ethnological science. It has no less effectually controlled the deductions of observant travellers. Mr. Stephens having submitted to Dr. Morton the bones rescued by him from an ancient grave among the ruins of Ticul, "so crumbled and broken, that in a court of law their ancient proprietor would not be able to identify them," he succeeding in piecing together, out of the broken fragments, the posterior and lateral portions of the skull; and from these imperfect data pronounced it to be that of a female, presenting "the same physical conformation which has been bestowed with amazing uniformity upon all the tribes on the continent, from Canada to

[1] In this statement Dr. Morton would seem to have had in view his theoretical type, rather than the results of his own observations, unless he accepted as evidence the artificially abbreviated and flattened skulls; and even of these his *Crania Americana* furnishes only one example, from a mound on the Alabama river (plate liv.) "It is flattened on the occiput and os frontis in such manner as to give the whole head a sugar-loaf or conical form, *whence also its great lateral diameter, and its narrowness from back to front.*"

[2] "Physical Type of the American Indians," Schoolcraft's *History of the Indian Tribes*, vol. ii. p. 316.

[3] *Types of Mankind*, p. 87.

Patagonia, and from the Atlantic to the Pacific Ocean."[1] Some of Mr. Stephens' own personal observations pointed, as we have seen, to a very different conclusion; but he resigned his judgment to this scientific dogma, and accepted it as conclusive proof that the ruins he had been exploring are the work of elder generations of the same Indians who now, miserable and degraded, cling around their long-deserted sites.

Apart from its bearing on the question of the indigenous origin of the American race, as an essentially distinct species in the genus *Homo*, this idea of a nearly absolute homogeneity pervading the tribes and nations of the Western Hemisphere, through every variety of climate and country, from the Arctic to the Antarctic circle, is so entirely opposed to the ethnic phenomena witnessed in other quarters of the globe, that it is deserving of the minutest investigation. It is, indeed, admitted by Morton that the agreement is not absolute; and a distinction is drawn by him, and to some extent recognised and adopted by his successors, between the "barbarous or American," and the "civilized or Toltecan," tribes. Accordingly, one of the three propositions with which Dr. Morton sums up the results deduced from the mass of evidence set forth in his *Crania Americana* is, "That the American nations, excepting the polar tribes, are of one race and one species, but of two great families, which resemble each other in physical, but differ in intellectual character."[2] But the distinction, when thus defined, is manifestly not an ethnical one, but the mere accompaniment of civilisation with its wonted intellectual development. An essential difference in physical type is indeed recognised as separating the Esquimaux, or polar tribes, from the true American autochthones; but any physical difference between the remaining two great families into which the American nations are divided is expressly denied. Such a distinction is, for ethnological purposes at least, arbitrary, indefinite, and valueless.

Other differences, or varieties, recognised among the tribes of North and South America, have been acknowledged; but only in such a manner as to harmonize with Morton's postulate of one American type of man; and to confirm the assumption of his indigenous origin among the fauna peculiar to the Western Hemisphere. Agassiz, when alluding to the conflicting opinions maintained by zoologists as to the number of species into which the genus *Cebus* is divisible, remarks: "Here we have, with reference to one genus of monkeys, the same diversity of opinion as exists among naturalists

[1] Stephens' *Travels in Yucatan*, vol. i. p. 284.
[2] *Crania Americana*, p. 260.

respecting the races of man. But in this case the question assumes a peculiar interest, from the circumstance that the genus Cebus is exclusively American; for that discloses the same indefinite limitation between its species which we observe also among the tribes of Indians, or the same tendency to splitting into minor groups, running really one into the other, notwithstanding some few marked differences: in the same manner as Morton has shown that *all the Indians constitute but one race*, from one end of the continent to the other. This differentiation of our animals into an almost indefinite number of varieties, in species which have, as a whole, a wide geographical distribution, is a feature which prevails very extensively upon the two continents of America. It may be observed among our squirrels, our rabbits and hares, our turtles, and even among our fishes; while, in the Old World, notwithstanding the recurrence of similar phenomena, the range of variation of species seems less extensive, and the range of their geographical distribution more limited. In accordance with this general character of the animal kingdom, we find likewise that, among men, with the exception of the Arctic Esquimaux, there is only one single race of men extending over the whole range of North and South America, but dividing into innumerable tribes; whilst, in the Old World, there are a great many well-defined and easily distinguished races, which are circumscribed within comparatively much narrower boundaries."[1]

Such is the argument by which this distinguished American naturalist seeks to harmonize the theory of Morton with seemingly irreconcilable facts; and thereby to confirm his idea of a complete correspondence between the circumscribed areas of the animal world and the natural range of distinct types of man. The difficulties arising from admitted physical differences in the one American race, are solved by other writers who hold to this indigenous unity, by such gratuitous assumptions as that advanced by Mr. Gliddon, that "in reality these races originated in *nations*, and not in a single pair; thus forming proximate, but not identical species."[2] In spite of such theories, however, the irreconcilable variations from any assumed normal type could not be altogether ignored; and the difficulty is repeatedly glanced at, though it is not fairly grappled with by any of the writers of "the American School of Ethnology." The closest approximation to a recognition of the legitimate deduction from such contrasting cranial characteristics, is made by Dr. Morton himself, where—overlooking, as I conceive, the true cause,

[1] *Indigenous Races of the Earth*, p. xiv.
[2] *Types of Mankind*, p. 276.

—he remarks, in reference to the larger cerebral capacity of the Indian in his savage state, than of the semi-civilized Peruvian :—"Something may be attributed to a primitive difference of stock, but more, perhaps, to the contrasted activity of the two races."

Whilst, however, this supposed unity in physical form is so strongly asserted throughout the writings of Dr. Morton, and has been accepted and made the basis of many comprehensive arguments dependent on its truth, its originator was not unaware that it was subject to variations of a very marked kind, although he did not allow their just weight to these, when determining the conclusions from his carefully accumulated data. He thus remarks, in his *Crania Americana*, on certain unmistakable diversities of form into which the assumed American cranial type may be subdivided, when classing the so-called *barbarous nations* :—"After examining a great number of skulls, I find that the nations east of the Alleghany Mountains, together with the cognate tribes, have the head more elongated than any other Americans. This remark applies especially to the great Lenapé stock, the Iroquois and the Cherokees. To the west of the Mississippi we again meet with the elongated head in the Mandans, Ricaras, Assinaboins, and some other tribes."[1] The Minetaries, Crows, and Blackfeet, are added to these, in his latest reference to the same subject. But Dr. Morton superadds the remark :—"Even in these instances the characteristic truncature of the occiput is more or less obvious, while many nations east of the Rocky Mountains have the rounded head so characteristic of the race, as the Osages, Ottoes, Missouris, Dacotas, and numerous others. The same conformation is common in Florida ; but some of these nations are evidently of the Toltecan family, as both their characteristics and traditions testify. The heads of the Caribs, as well of the Antilles as of *terra firma*, are also naturally rounded ; and we trace this character, as far as we have had opportunity for examination, through the nations east of the Andes, the Patagonians and the tribes of Chili. In fact, the flatness of the occipital portion of the cranium will probably be found to characterize a greater or less number of individuals in every existing tribe from Tierra del Fuego to the Canadas. If their skulls be viewed from behind, we observe the occipital outline to be moderately curved outward, wide at the occipital protuberances, and full from those points to the opening of the ear. From the parietal protuberances there is a slightly curved slope to the vertex,

[1] *Crania Americana*, p. 65 ; *Physical Type of the American Indians ; History of Indian Tribes*, vol. ii. p. 317.

producing a conical, or rather a wedge-shaped outline." These opinions are still more strongly advanced in Dr. Morton's most matured views, where he affirms the American race to be essentially separate and peculiar, and with no obvious links, such as he could discern, between them and the people of the Old World, but a race distinct from all others.

Following in the footsteps of the distinguished Blumenbach, Dr. Morton has the rare merit of having laboured with patient zeal and untiring energy, to accumulate and publish to the world the accurately observed data which constitute the only true basis of science. His *Crania Americana* is a noble monument of well-directed industry; and the high estimation in which it is held, as an accurate embodiment of facts, has naturally tended to give additional weight to his deductions. But it is obvious that his mind dwelt too exclusively on one or two of the leading characteristics, more or less common, amid many equally important variations in American crania; and the tendency of his views, as based on the results of his extended observations, was to regard the most marked distinctions in American crania as mere variations within narrow limits, embraced by the common and peculiar type, which he recognised as characteristic of the whole continent, both north and south. In this opinion his successors have not only concurred, but they attach even less importance to the variations noted by his careful eye. Dr. Nott, for example, when noting the peculiarities of a remarkable brachycephalic mound skull, adds: "Identical characters pervade all the American race, ancient and modern, over the whole continent. We have compared many heads of living tribes, Cherokees, Choctaws, Mexicans, etc., as well as crania from mounds of all ages, and the same general organism characterizes each one."[1]

Since the death of Dr. Morton, his greatly augmented collection, now numbering upwards of eleven hundred skulls, has been deposited in the Cabinet of the Academy of Natural Sciences of Philadelphia, and his catalogue has been carefully edited and extended under the care of Dr. J. Aitken Meigs. The rearrangement and classification led to no change in the inferences deduced from this valuable accumulation of evidence; and, in a later publication, Dr. Meigs remarks: "Through the *Crania Americana*, it has long been known to the scientific world that a remarkable sameness of osteological character pervades all the American tribes, from Hudson's Bay to Tierra del Fuego."[2]

[1] *Types of Mankind*, p. 291.
[2] *Cranial Characteristics of the Races of Men; Indigenous Races*, p. 332.

Such, then, is the opinion arrived at by Dr. Morton, as the result of extensive study and observation, accepted or confirmed by his successors, and made the starting-point from whence to advance to still more comprehensive conclusions. It is not necessary, therefore, to prove the recognition of this well-known ethnological postulate by further references. Its influence is sufficiently apparent, from its adoption by one of the very foremost among American men of science in support of his peculiar views as to the indigenous origin of distinct types of man, as well as of the inferior animals. But while some of the conclusions of American ethnologists have been combated with earnest zeal, it has not occurred to their opponents to challenge this physiological postulate, which lies at the basis of the whole.

When my attention was first directed to the investigation of the cranial conformation of ancient races, it was in reference to the primitive occupants of the British Islands. Nothing had been attempted with this purpose in view, so far as Scotland was concerned, but the contribution then offered as a beginning towards the accumulation of the requisite data, has since been followed up by efficient labourers in this new field of research. At that time I had little anticipation of ever devoting my attention to the physical conformation of ancient or modern races of the New World, with the facilities arising from long residence on the American continent. Nevertheless, the special characteristics ascribed to the American race had already been noted by me, and certain points of correspondence traced between them and such as pertain to the crania of ancient British tumuli.[1] When in more recent years unexpected opportunities enabled me to investigate for myself these characteristics of the aboriginal occupants of the American forests and prairies, I availed myself of them, in the full anticipation of meeting with such evidences of a general approximation to the assigned cranial type as would confirm the deductions of previous observers. My chief aim, indeed, when first exploring some of the Indian cemeteries in Canada, was to acquire specimens of skulls approximating to the peculiar brachycephalic type of one important class of early Scottish graves. It was, accordingly, at first with a sense of disappointment that, after repeated explorations in different localities, I obtained a collection of Canadian crania, which, though undoubtedly Indian, exhibited little or no traces of the compressed form, with short longitudinal diameter, so strikingly apparent in ancient Mexican and Peruvian skulls, and in the

[1] *Prehistoric Annals of Scotland*, 1st Ed. p. 167.

rare examples recovered from mounds of the Mississippi Valley. Slowly, however, the conviction forced itself upon me, that to whatever extent this assigned typical skull may be found in other parts of the continent, those most frequently met with along the north shores of the great lakes are deficient in some of its most essential elements. Similar conclusions are indicated by Dr. Latham, when comparing the Esquimaux and American Indian forms of skull, as determined by Dr. Morton;[1] and are no less strongly affirmed by Dr. Retzius, who states that it is scarcely possible to find a more distinct separation into dolichocephalic and brachycephalic races than in America.[2] Nor should the remark of Professor Agassiz be overlooked in reference to Dr. Morton's one, uniform American, race, "that, in accordance with the zoological character of the whole realm, this race is divided into an infinite number of small tribes presenting more or less difference one from another." Dr. Knox also, in his *Races of Men*, not only expresses his doubt of "the asserted identity of the Red Indian throughout the entire range of continental America," but he ridicules the opinion of Dr. Morton that the difference between the extreme forms of Peruvian and other American skulls is the result of artificial compression differently applied to the same primary form.[3]

It is indeed necessary to determine what must be regarded as the essential requisites of Dr. Morton's American typical cranium; for neither he nor his successors have overlooked the fact of deviations from this supposed normal type, not only occurring occasionally, but existing as permanent characteristics of certain tribes. As has been already shown, Dr. Morton recognised a more elongated head as pertaining to certain tribes, but this he speaks of as a mere slight variation from the more perfect form of the normal skull, and he adds: "Even in these instances the characteristic truncation of the occiput is more or less obvious."[4] So also Dr. Nott, after defining the typical characteristics of the American cranium, remarks: "Such are more universal in the Toltecan than the barbarous tribes. Among the Iroquois, for instance, the heads were often of a somewhat more elongated form; but the Cherokees and Choctaws, who, of all barbarous tribes, display greater aptitude for civilisation, present the genuine type in a remarkable degree. My birth and long residence in Southern States have permitted the

[1] *Natural History of the Varieties of Man*, p. 453.
[2] *Arch. des Sciences Naturelles*, Geneva, 1860.
[3] *Races of Men*, pp. 127, 276.
[4] *Crania Americana*, p. 69; *History of Indian Tribes*, vol. ii. p. 317.

study of many of these living tribes, and they exhibit this conformation almost without exception. I have also scrutinized many Mexicans, besides Catawbas of South Carolina, and tribes on the Canada Lakes, and can bear witness that the living tribes everywhere confirm Morton's type."[1]

In selecting a skull, which seemed to Dr. Morton in all respects to fulfil the theoretical requirements of his typical cranium, we are guided, under his directions, to that ancient people who, in centuries long prior to the advent of Europeans, originated some remarkable traits of a native civilisation in the valleys of the eastern tributaries of the Mississippi. It will, therefore, coincide with his choice of an example of the true American head, if, starting from that ancient race, we pursue our comparisons downward to the nations and tribes familiar to Europeans by direct intercourse and personal observation.

The ingenious and learned author of *Iconographic Researches on Human Races and their Art*, deduces, as we have already seen, from one of the portrait pipe-sculptures of the ancient Mounds,—or rather from the engraving of it furnished in the first volume of the *Smithsonian Contributions to Knowledge*,—the comprehensive conclusions :—that the Mound-Builders were American Indians in type, and were probably acquainted with no other men but themselves ; to which he adds, "in every way confirming the views of the author of *Crania Americana*." Mr. Schoolcraft goes still further; and, ignoring not only the unquestionable proofs of the lapse of many centuries since the construction of the great earthworks in the Ohio Valley, but also all the evidences of geometrical skill, a definite means of determining angles, a fixed standard of measurement, and the capacity, as well as the practice of repeating geometrically constructed earthworks of large and uniform dimensions : he thus sums up his account of the Alleghans, the oldest known occupants of the Ohio Valley : "The tribes lived in fixed towns, cultivated extensive fields of the zea-maize, and also, as denoted by recent discoveries, of some species of beans, vines, and esculents. They were in truth the Mound-Builders."[2]

Reference has been made in a previous chapter to the discovery of the "Scioto Mound Skull," the most characteristic of the crania of the Mound-Builders. It lay embedded in a compact mass of carbonaceous matter, intermingled with a few detached bones of the skeleton and some fresh-water shells. Over this had been

[1] *Types of Mankind*, p. 441. [2] *History of Indian Tribes*, vol. v. p. 135.

heaped a mound of rough stones, on the top of which, incovered by the outer layer of clay, lay a large plate of mica, that favourite material of the ancient Mound-Builders. This is the skull which, according to the description of Dr. Morton, furnishes the best "example of the true typical American head." It is produced as such by Dr. Nott, in the *Types of Mankind*, and is described in the

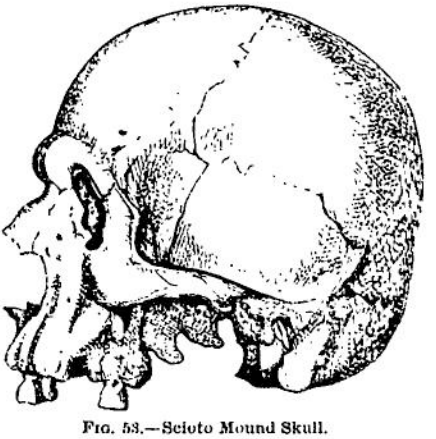


Fig. 53.—Scioto Mound Skull.

words of Dr. Morton, in Dr. Meigs' "Catalogue of Human Crania in the Collection of the Academy of Natural Sciences of Philadelphia," as "perhaps, the most admirably-formed head of the American race hitherto discovered. It possesses the national characteristics in perfection, as seen in the elevated vertex, flattened occiput, great interparietal diameter, ponderous bony structure, salient nose, large jaws and broad face. It is the perfect type of Indian conformation, to which the skulls of all the tribes from Cape Horn to Canada more or less approximate."

Of this skull the measurements which involve the most essential typical elements, and so furnish precise materials for comparisons are :—

Longitudinal diameter,	6·5 inches.
Parietal ,,	6·0 ,,
Vertical ,,	6·2 ,,
Inter-mastoid arch,	16·0 ,,
Horizontal circumference,	19·8 ,,

So that, in fact, the cranium very closely corresponds in its measurements, in length, breadth, and height. Still further it may be noted, on examining the skull, as figured above, that the singular longitudinal abbreviation affects the posterior, much more than the

anterior development, though a careful examination of the original has satisfied me that this is considerably exaggerated in the full-sized drawings of Dr. Davis.[1] If, however, we turn from the definition of this particular skull, to the general formulæ derived from the examination of numerous examples, they amount to this:

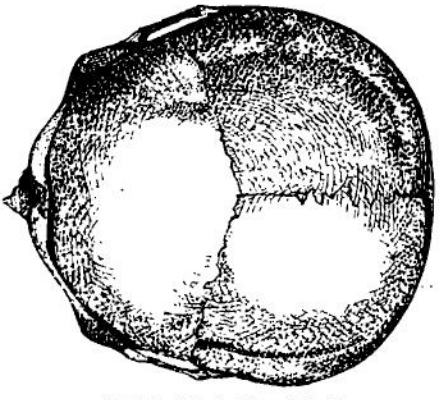


FIG. 54.—Scioto Mound Skull.

A small receding forehead, somewhat broad at the base, but with a greatly depressed frontal bone;[2] a flattened or nearly vertical occiput; viewed from behind, an occipital outline which curves moderately outwards, wide at the occipital protuberances, and full from these points to the opening of the ear; from the parietal protuberances a slightly curved slope to the vertex, producing a wedge-shaped outline; a great vertical diameter; and the predominant relative interparietal diameter of the brachycephalic cranium. If to those are added large quadrangular orbits, cheek-bones high and massive, the maxillary region salient and ponderous, and the nose prominent: we have, nearly in Dr. Morton's own words, the most characteristic features of that American cranium which prevails among ancient and modern tribes of the brachycephalic type, and has been assumed by him as universal.

It is with great diffidence that I venture to challenge conclusions, adopted after mature consideration by the distinguished author of the *Crania Americana*. But in proceeding to apply the evidence of physical conformation as a means of comparison between ancient and modern races of the New World, a revision alike

[1] *Ancient Monuments of the Mississippi Valley*, pls. xlvii. xlviii.

[2] "There is no race on the globe in which the frontal bone is so much pressed backwards, and in which the forehead is so small."—*Humboldt.* "All possess alike the low receding forehead."—*Morton.*

of the evidence and the deductions therefrom becomes indispensable. Tried by his own definitions and illustrations, the Scioto Mound skull essentially differs from the American typical cranium in some of its most characteristic features. Instead of the low, receding, unarched forehead, assigned independently by Humboldt and Morton, we have here a finely arched frontal bone, with corresponding breadth of forehead. The conical or wedge-shaped vertex is, in like manner, replaced by a well-rounded arch, curving equally throughout; and with the exception of the flattened occiput, due, as I believe to artificial, though probably undesigned compression in infancy, the cranium is a uniformly proportioned example of an extreme brachycephalic skull. It has been selected, in the *Types of Mankind*,[1] for the purpose of instituting a comparison with the well-developed head of a Cherokee chief, who died, while a prisoner at Mobile, in 1837, and the two crania are there engraved side by side, with other examples: "to show through faithful copies, that the type attributed to the American races is found among tribes the most scattered; among the semi-civilized and the barbarous; among living as well as among extinct races; and that no foreign race has intruded itself into their midst, even in the smallest appreciable degree."[2] But, judging merely by the reduced profile drawings, placed in juxtaposition, without reference to precise measurements, the points of agreement are very partial. The vertical occiput of the ancient skull rounds somewhat abruptly into a slightly arched horizontal vertex, and with the well-developed forehead, and short longitudinal diameter, gives a peculiarly square form to it, in profile. In the modern skull, on the contrary, the occipital flattening is not so much that of the occiput proper, as of the posterior part of the parietal, together with the upper angle of occipital bone; thereby uniting with the receding forehead of the latter, to produce a conoid outline, in striking contrast to the square form of the other. But a comparison of the measurements of the two skulls, serves no less effectually to refute the supposed correspondence, adduced in proof of a typical unity traceable throughout tribes and nations of the Western Hemisphere the most widely separated alike by time and space.[3]

[1] *Types of Mankind*, p. 442.

[2] Dr. Nott's definition is as follows: "The most striking anatomical characters of the American crania are, small size; low, receding forehead; short antero-posterior diameter; great inter-parietal diameter; flattened occiput; prominent vertex; high cheek-bones; ponderous, and somewhat prominent jaws."—*Ibid.* p. 441.

[3] The measurements of the modern skull are given, as above, in the *Proceed-*

	Ancient.	Modern.
Longitudinal diameter,	6·5	6·9
Parietal,	6·0	5·7
Vertical,	6·2	5·4
Frontal,	4·5	4·6
Inter-mastoid arch,	16·0	15·5
Inter-mastoid line,	4·5	4·75
Occipito-frontal arch,	13·8	14·4
Horizontal circumference,	19·8	20·4

It is not to be supposed that any single skull can be selected as the embodiment of all the essential typical characteristics either of the ancient or the modern cranial conformation; nor can we deduce general conclusions as to the physical characteristics of the ancient Mound-Builders from the remarkable example referred to. We lack, indeed, sufficient data as yet for any absolute determination of the cranial type of the mounds; but the Scioto Mound skull cannot with propriety be designated as "the only skull incontestably belonging to an individual of that race." The Grave Creek Mound cranium, figured by Dr. Morton, belongs no less indisputably to the same race, and presents in its arched forehead, prominent superciliary ridges, and compact, uniformly rounded profile, a general correspondence to the previous example.[1] In 1853, Dr. J. C. Warren exhibited to the Boston Natural History Society the cast of a second and more perfect skull from the same mound,[2] which I have since examined and measured in the collection of Dr. J. Mason Warren. It is also worthy of note that several inferior maxillary bones of the mound skeletons have been recovered nearly entire. They are remarkable for their massiveness, and are described as less projecting than those pertaining to the skeletons of a later date.[3] Another skull given by Dr. Morton, from a mound on the Upper Mississippi, was obtained from an elevated site bearing considerable resemblance to that where the Scioto Valley cranium was found; but the evidence is insufficient to remove the doubts which its proportions suggest, that in this, as in so many other cases, we have only one of those later interments habitually made by the modern Indians in the superficial soil of the mounds. It is better, mean-

ings of the Boston Natural History Society, vol. v. p. 77. I owe it to the frank liberality of Dr. Nott, that I was able to identify this as the skull referred to. My own measurements, taken in 1860, give a still greater longitudinal diameter. It will be seen by comparing the two columns, that the modern skull is in excess in longitudinal diameter, while both in breadth and height it is decidedly less.

[1] *Crania Americana*, pl. liii. p. 223.

[2] *Proceedings of Boston Nat. Hist. Soc.*, vol. iv. p. 331.

[3] *Ancient Monuments of the Mississippi Valley*, p. 290.

while, to reject all doubtful examples, than to incur the risk of cumbering such well-authenticated evidence as we may confidently anticipate, with uncertainty and confusion. The following table includes a series of measurements of mound and ancient cave crania, mostly taken by myself from the originals in the Academy of Natural Sciences at Philadelphia, the collection of Dr. Warren of Boston, and elsewhere :—

TABLE I.—MOUND AND CAVE CRANIA.

	LOCALITY.		L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A.	H. C.
1.	Scioto Mound, . .	M.	6·5	6·0	4·5	6·2	16·0	4·5	13·8	19·8
2.	Grave Creek Mound,	M.	6·6?	6·0	...	5·0	...	...	14·2?	...
3.	,, ,, .	M.	6·6	6·0	4·0	5·4	15·6	4·3	...	20·2
4.	Tennessee, ,, .	M.	6·6	5·6	4·1	5·6	15·2	4·4	14·0	19·5
5.	Huron River, Ohio,	M.	6·7	5·7	4·0	...	14·8	4·4	14·?	19·8
6.	,, .	F.	6·7	5·4	4·0	5·4	14·0	4·2	13·7	19·9
7.	Ohio Mound, . .	F.	6·4	5·3	4·0	5·0	14.2?	4·?	...	19·0
8.	Alabama Mound, .	M.	6·2	5·4	4·3	4·9	14·6	3·8	13·3	18·5
9.	Golconda Cave, .	M.	6·7	5·4	4·3	5·5	14·5	4·1	14·0	19·3
10.	Steubenville Cave, .	M.	7·0	6·1	4·6	5·6	15·5	4·3	14·0	20·5
11.	,, .	M.	6·8	5·9	4·4	5·7	15·5	4·5	14·4	20·5
12.	,, .	M.	6·3	5·9	4·9	5·7	15·8	5·0	14·1	20·0
13.	,, .	M.	6·6	6·0	4·6	5·1	14·6	4·2	13·3	20·0
14.	,, .	F.	6·6	5·4	4·3	5·1	14·?	4·3	13·9	19·0
15.	,, .	M.	7·0	5·8	4·5	5·5	14·9	4·5	14·4	20·3
16.	,, .	M.	6·7	6·0	4·5	5·7	15·4	4·7	14·1	20·3
17.	,, .	F.	6·2	6·1	4·5	4·9	15·?	4·?	13·3	19·4
18.	,, .	M.	7·1	5·7	4·6	5·0	15·0	4·4	14·2	20·2
19.	,, .	M.	6·2	6·0	4·5	5·5	14·8	4·0	13·2	19·4
20.	Kentucky Cave, .	M.	6·1	5·4	4·4	5·6	14·5	4·4	13·6	18·4
21.	,, .	M.	6·7	5·5	4·5	6·2	13·5	5·0	...	19·7
	Mound Crania Mean,		6·54	5·67	4·13	5·36	14·91	4·23	13·83	19·53
	Cave Crania Mean, .		6·62	5·78	4·51	5·47	14·85	4·42	13·87	19·77
	Total Mean, . .		6·58	5·74	4·37	5·43	14·87	4·35	13·86	19·68

Of the series embraced in this table, though all are ancient, only the first four can be relied upon as undoubted examples of the crania of the Mounds. In comparing them with others, there are indications of a peculiar cranial type partially approximating to the brachycephalic Peruvian cranium; but this assumed correspondence has been exaggerated, and some important differences have been slighted or ignored, in the zeal to establish the affinities which such an agreement would seem to imply. In vertical elevation the Peruvian cranium is decidedly inferior; and other points of dis-

tinction borne out by the few well-authenticated Mound crania, are: their well-formed and arched frontal bones, unaffected by the pressure to which the vertical occiput must be ascribed; and the great prominence of the superciliary ridges. These differences were overlooked by Dr. J. C. Warren, who pronounced the Mound and Peruvian crania to be identical. A greater correspondence seems to me to be traceable between the most ancient crania of the Mexican valley and those of the mounds. But, tempting as are the conclusions which such analogies suggest, any final decision on the ethnical significance of such skull-forms must be reserved until further discoveries place within our reach a sufficient number of skulls as well authenticated as those of the Scioto Valley and Grave Creek Mounds. This, there is little hope of achieving, until systematic explorations are instituted under the direction of a scientific Commission, the organization of which would reflect credit on the Government of the United States. The Cave crania, Nos. 9-21, are a remarkable series of undoubted antiquity, and present a nearer approximation to the mound type than any other class. Their most notable divergence, in the parietal diameter, disappears if the doubtful examples of the latter, Nos. 5-8, are excluded, as in Table XV.

Turning from this review of the meagre data hitherto recovered from the ancient sepulchral mounds, let us next consider the two great civilized nations of the New World, the Peruvians and Mexicans. Their civilisation had an independent origin and growth. The scenes of its development were distinct; and each exhibited special characteristics of intellectual progress. Nevertheless, they had so much in common, that the determination of the physical type peculiar to each will be best secured by ascertaining what is common to both.

When Dr. Morton first undertook the investigation of the cranial characteristics of the American races, he admitted the force of the evidence presented to him in the examination of a number of ancient Peruvian skulls; and has recorded his recognition of the traces of well-defined brachycephalic and dolichocephalic races among the ancient Peruvians.[1] But the seductive charms of his comprehensive theory of an American ethnic unity ultimately prevailed over the earlier opinion; which, even in the *Crania Americana*, was stated as a legitimate deduction from the evidence in question, without being incorporated into the author's concluding

[1] *Crania Americana*, p. 98.

propositions, and he accordingly records his final conviction that all the extremest varieties of the Peruvian head were naturally "of the same rounded shape, which is characteristic of the aboriginal race, from Cape Horn to Canada,"[1] and owe their diversities of form solely to artificial deformation.

A revision of the evidence accumulated by Dr. Morton, along with additional illustrations of the cranial characteristics of the Ancient Peruvians, derived from other sources, suggests conclusions at variance with this idea. The following tables of measurements include results of observations on the collections of John H. Blake, Esq.; Dr. J. M. Warren; the Natural History Society of Boston; the Academy of Natural Sciences of Philadelphia; the Smithsonian Institution, Washington; and those of Dr. Archibald Smith, and the Society of Antiquaries of Scotland, at Edinburgh. In pursuing my researches on this subject, I have enjoyed repeated opportunities of minutely studying an interesting collection of crania and mummied bodies, procured by Mr. Blake from ancient Peruvian cemeteries, on the shore of the Bay of Chacota, near Arica, in latitude 18° 30′ S.; and have also been favoured with his carefully elaborated notes on the subject. The desert of Atacama, between the eighteenth and twenty-fifth degrees of south latitude, has been the site of sepulture for ancient Peruvian races through a period of unknown duration, and numerous cemeteries have been opened and despoiled. The mode of sepulture, and the articles deposited with the dead, present so uniform a resemblance, that, excepting in one point, Mr. Blake observes, a description of one may suffice for the whole. The difference noted arises from the varying soil. The greater number are interred in the dry sand, which generally covers the surface to a sufficient depth; but in some instances the excavations have been made in a soft rock (gypsum) which here and there approaches the surface. In this arid district, such is the nature of the soil and climate, that articles which speedily perish in a damp soil and a humid atmosphere, are found in perfect preservation after the lapse of centuries. Added to the facilities which nature has thus provided for perpetuating the buried traces of the ancient Peruvians, they themselves practised the art of embalming their dead. One of the largest cemeteries referred to is situated on a plain at the base of a range of low hills on the shore of the Bay of Chacota, a little southward of Arica, and about 185 leagues south-east of Lima. This plain is formed of

[1] *Physical Type of the American Indians*, p. 326.

silicious sand and marl, slightly impregnated with common salt, and nitrate and sulphate of soda. It is exceedingly light, fine, and dry; and such is its preservative nature, that even bodies interred in it without any previous preparation have not entirely lost the fleshy covering from their remains. In the cemeteries of this vast arid plain, the objects which, in all probability, were most highly prized by their owners, were deposited beside them, along with every article required in preparing the body for interment. Thus the needles used for sewing the garments and wrappings of the dead, the comb employed in dressing the hair, and even the loose hairs removed in this last process of the toilet, are all found deposited in the grave.

The collection of Peruvian antiquities formed by Mr. Blake, includes curious specimens of native pottery, implements wrought in stone, bronze, and wood, and numerous interesting sepulchral relics illustrative of native arts and customs. But the most valuable department embraces the entire contents of a Peruvian tomb, including the mummies of a man and woman, and the partially desiccated remains of a child. Some of the contents of this grave have already been referred to in illustration of Peruvian civilisation in a previous chapter; but a minute notice of the human remains, with the special accompaniments of their interment, will furnish information on various obscure points in the social history of this remarkable people. It was obviously a family tomb. The male mummy is that of a man in the maturity of life, in the usual sitting position with the knees drawn up to the chin. With the exception of a part of the integuments of the lower jaw, the body is in a good state of preservation. On its transference to the humid atmosphere of New England, the flesh became somewhat softened, but it exhibits no symptoms of decay. It is dark brown, and possesses a peculiar penetrating odour, somewhat similar to that of an Egyptian mummy. The head is of the common rounded Peruvian form, with retreating forehead, high cheek-bones, and prominent nose. The breadth of hand, as measured across the extremity of the metacarpal bones, with every allowance for the contraction produced in mummification, is remarkably small. The hair has undergone little or no change, and differs essentially from that most characteristic feature of the Indian of the northern continent. It is brown in colour, and as fine in texture as the most delicate Anglo-Saxon hair. It is neatly braided and arranged, the front locks being formed each into a roll on the side of the head, while the hair behind is plaited into a

triangular knot of six braids. The parti-coloured woollen garments and wrappings of this mummy are of fine texture; and the head-dress was an oblong striped hood, and over this a cap formed of woollen threads of various colours, ingeniously woven and surmounted by feathers and an ornament formed of the quills of the condor. A quiver made of the skin of a fox contained five arrows, the shaft of each consisting of two pieces of reed, tipped with sharp-pointed and barbed flint-heads, regularly formed, and attached by a tough green cement. Also suspended to one side, by a hair cord passing over the shoulder, was a woollen bag, finely woven in stripes of black, white, and brown, and curiously sewed at the sides with threads of various colours. This contained leaves of the coca, and a thin silver disk or medal, surrounded by a series of one hundred small indentations near the edge, and in the centre a space of three-fourths of an inch countersunk and perforated with a small round hole. To this a hair cord of about two feet in length is secured, probably to suspend it round the neck. When the hood was removed from the head a small earthen vessel, with rounded base, measuring about two inches in greatest diameter, and with the top covered by a membrane, was found secured under the chin.

The body of the female from the same tomb presents nearly similar characteristics. The hair is shorter, and somewhat coarser, but fine when compared with that of the northern Indians. It is of a light brown colour, smooth, and neatly braided across the upper part of the forehead, then carried backward and secured on each side of the head. The flesh of the legs, from the ankles to the knees, is covered with red paint; and marks of the same pigment are also traceable on the hair and on the outer woollen wrappings, presenting the impress of a hand. Such marks are common on Peruvian mummies; and, taken into consideration along with the small size of the hand, already noticed, they forcibly recall the *mano colorado* observed by Stephens amid the ruins of Uxmall: the impress of a living hand, but so small that it was completely hid under that of the traveller or his companion. It afterwards stared them in the face, as he says, on all the ruined buildings of the country; and on visiting a nameless ruin, beyond Sabachtsché, in Yucatan, Mr. Stephens remarks: "On the walls of the desolate edifice were prints of the *mano colorado*, or red hand. Often as I saw this print, it never failed to interest me. It was the stamp of the living hand. It always brought me nearer to the builders of these cities; and at times, amid stillness, desolation, and ruin, it

seemed as if from behind the curtain that concealed them from view was extended the hand of greeting. The Indians said it was the hand of the master of the building." Such indications of any community of customs or usage between the Peruvians and the ancient builders of Yucatan or Central America are full of interest, however slight; nor does it detract from their value that the same practice pertains to the northern tribes, and is curiously interwoven with their symbolic decorations.

The symbol of the expanded hand appears among the devices on the Engraved Aztec Hatchet, Fig. 51; and constantly occurs in painted or graven ideography. One example figured here, copied by Lieut. J. H. Simpson, U.S.A., from a remarkable series of ancient native hieroglyphics and European inscriptions, on the Moro Rock, in the valley of the Rio de Zuñi, exhibits the open hand in a group of Indian characters, or devices, alongside of which is a Spanish

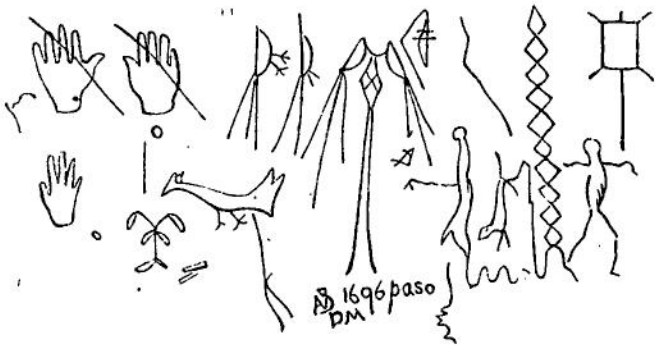


FIG. 55.—Moro Rock Inscription.

inscription of the seventeenth century. Another example, apparently of early Spanish origin, on the same Moro Rock, shows the open hand, with the singular addition of a double thumb, enclosed in one cartouche alongside of the sacred monogram I.H.S., as though it were the recognised native counterpart of the Christian symbol. On the same subject, Mr. Schoolcraft observes: "The figure of the human hand is used by the North American Indians to denote supplication to the Deity or Great Spirit; and it stands in the system of picture-writing as the symbol for strength, power, or mastery thus derived." It admits, however, of comprehensive application, with varying significance. Irving remarks in his *Astoria:* "The Arickaree warriors were

FIG. 56.—Moro Monogram.

painted in the most savage style. Some had the stamp of a red hand across their mouths, a sign that they had drunk the life-blood of a foe." Catlin found the same symbol in use for decoration, and as the actual sign-manual among the Omahaws and the Mandans; and I have repeatedly observed the red hand impressed in a similar manner both on the buffalo robe and on the naked breast of the Chippewas of Lake Superior.

Upon removing the outer wrapper of the female mummy, a wooden comb, a pair of painted sandals of undressed skin, a package of rutile, or oxide of titanium, and other articles, were found beneath. In addition to those, the tomb contained many other objects, such as ears of maize, leaves of coca, a roll of cotton cord, etc., enclosed in bags of fine texture, ingeniously woven of woollen threads, in patterns and devices of various colours, and evidently such as had been in use by their owner. The contents of one of these have a double significance for us. Woven of a peculiar pattern differing from all the others, and of an unusually fine texture: it was found, on being opened, to contain a small bead of malachite, the only one discovered in the tomb, and locks of human hair, each secured by a string tied with a peculiar knot. All the hair is of fine texture, of various shades, from fine light brown to black, and to all appearance has undergone no change.

The colour and texture of the hair are facts of great importance to the ethnologist, as indicating essential differences from the modern Indians in one important respect; and therefore confirming the probability of equally important ethnic differences, suggested by other evidence. But the discovery has also another aspect of interest. In this family tomb, in which lay the parents with their infant child, we may assume with little hesitation that we have the locks of hair of the surviving relatives: in all probability of elder members of the same family as the infant interred here in its mother's grave. It is a touch of genuine human tenderness and feeling, such as "makes the whole world kin," and gives life to that long-forgotten past to which the kindliest sympathies of our common nature respond. Alongside the female there also lay an unfinished piece of weaving stretched upon its frame, and with its yarn of various colours still bright: the work of the deceased, doubtless, and probably the last labour that had engaged her hands. The needle of thorn was in it, and beside it several balls of yarn. We need not necessarily assume, however, that it was laid beside her under the belief that she would resume the task in a future life.

It appears rather another of those traits of a gentle loving nature, which derive further illustration from other contents of the Atacama cemeteries.

In the same grave lay the remains of the young infant, carefully wrapt in a soft black woollen cloth, and then enclosed in the skin of a penguin with the feathered side inward. Fastened to the woollen wrapper was a pair of little sandals, two and a half inches long. The head was partially covered with a loose cap lined with a wadding of human hair, and cotton stained with red pigment. Within the cap was a large lock of hair resembling that of the female, which, as already described, had been cut short, probably as a sign of mourning, as is still practised by the women of many Indian tribes. Beside it there also lay, in a cloth envelope, secured with elaborate care, a brown cord with seven knots, and at the end what is believed to be the umbilicus. This is, no doubt, the quipu, or sepulchral record, which to the eye of the bereaved mother recalled every cherished incident in her child's brief career. Around its neck was a green cord attached to a small shell; and within the wrappings were several *Littora Peruviana,* and also small rolls of hair of the vicuna, and of cotton, the former enclosing leaves of coca. In another cemetery, several hundred miles to the south of the Bay of Chacota, Mr. Blake found many bodies of infants, each enclosed in an oval sarcophagus cut out of a single block of wood; and he also notes the more singular, though frequent discovery in Peruvian cemeteries, of the fœtus in all stages of development, and deposited in the grave with the same elaborate evidences of care as was expended on the deceased infant. The practice is remarkable, if not indeed unique.

Such are some illustrations of ancient Peruvian customs and sepulchral rites, along with evidence of characteristics which go far to disprove the assumed unity of physical type throughout the Western Hemisphere. No feature of the modern Indian is more universal, or yields more slowly even to the effacing influences of hybridity, than the long, coarse black hair, which so strikingly contrasts with the short woolly covering of the Negro's head. I have repeatedly obtained specimens from Indian graves, as from the Huron graves near Lake Simcoe, the most modern of which cannot be later than the middle of the seventeenth century. In all these the hair retains its black colour and coarse texture, unchanged alike by time and inhumation; and in this respect corresponds with that of the Modern Indians of South America, and also of the

Chinese and other true Mongols of Asia. The Peruvians, Dr. Morton observes, "differ little in person from the Indians around them, being of the middle stature, well limbed, and with small feet and hands. Their faces are round, their eyes small, black, and rather distant from each other; their noses are small, the mouth somewhat large, and the teeth remarkably fine. Their complexion is a dark brown, and their hair long, black, and rather coarse." In this respect, therefore, the disclosures of the Peruvian cemeteries of Atacama reveal important variations from one of the most persistent and universal characteristics of the modern American races; nor is their evidence less conclusive as to the essential diversity in cranial conformation. On this latter point the collections of Mr. Blake throw great light; and the conclusions forced on him by much more extended observations carried on during his residence in Peru led to the conviction that two distinct forms of skull are found in the ancient cemeteries of that country, "the one rounded or globular, the other elongated." Those of the bodies found in the tomb described above are of the former, or brachycephalic type; but the collection of crania made by Mr. Blake was selected by him from a very large number, as fair average specimens of each of the two distinct types which presented themselves to his observation during his exploration of the ancient cemeteries of the desert of Atacama; and, with those described by Dr. Morton, and others which I have had opportunities of examining in various

FIG. 57.—Peruvian Brachycephalic Skull.

collections, furnish materials from whence the following conclusions are derived. The skulls are generally small: a characteristic in part, at least, ascribable to the average stature of the people,

which Dr. Morton failed to take into consideration when estimating the relative cerebral capacity of the "American," or true Red Indian, and the "Toltecan" tribes. Of the brachycephalic type, Mr. Blake has noted: "The occipital bone is flat, and the forehead retreating, but elevated and broad when compared with the elongated skull. The temporal fossa is not remarkably large. When the eye is directed downward upon these skulls, the occiput being towards the observer, the zygomatic arch is nearly in most, and entirely in some of them hidden from the sight. Viewed in the same position, the face is completely hidden by the upper and front part of the cranium. The orbits are deep, and their margins quadrangular. The bones of the nose are prominent, and the orifices large. The cheek-bones are high. The alveolar edges of the jaws are obtusely arched in front, and the chin projects on a line with the teeth. Compared with the elongated skulls, the face is small, and its outlines more rounded. The cheek-bones descend in nearly a straight line from the external angular process of the frontal bone." Figure 57 illustrates the characteristics of this type of ancient Peruvian head, as seen in one brought from the cemeteries of Atacama; though, in this example, the frontal bone is

FIG. 58.—Peruvian Depressed Skull.

unusually high and well-arched. The occiput is also smoothly rounded, and the skull symmetrical throughout. Fig. 58 shows the brachycephalic skull depressed and thrown backward, and illustrates one of the commonest Peruvian forms resulting from artificial compression in infancy. The following table of measurements of crania in the Boston and Philadelphia collections, includes those of four (Nos. 1-4) selected by Mr. Blake, from a large number, as fair average specimens of the prevailing type:—

TABLE II.—PERUVIAN BRACHYCEPHALIC CRANIA.

	LOCALITY.		L. D.	P. D.	F. D.	VI. D.	I. A.	I. L.	O. F. A.	H. C.
1.	Atacama, . . .	M.	6·0	5·2	3·5	5·2	...	...	...	...
2.	,, . . .	M.	6·3	5·0	3·5	5·3	...	...	...	...
3.	,, . . .	M.	6·6	5·3	3·4	5·3	...	...	...	...
4.	,, . . .	M.	6·7	5·6	3·6	5·4	...	...	...	...
5.	S. of Arica, . .	M.	6·1	5·6	3·4	5·1	14·6	4·1	...	18·4
6.	,, . .	M.	6·4	5·1	3·2	5·1	14·5	4·1	...	19·0
7.	Peru, . . .	M.	6·2	5·8	3·7	5·6	15·1	4·2	...	19·1
8.	Lima, . . .	M.	6·3	5·8	3·6	5·4	15·6	4·2	...	19·7
9.	Titicaca, . . .	M.	6·3	5·9	4·0	5·3	16·0	4·1	...	19·2
10.	,, (145) . .	M.	6·2	5·9	3·4	5·0	14·7	4·3	...	20·1
11.	,, (146) . .	M.	6·5	5·9	4·0	5·3	15·5	4·9	...	19·5
12.	Arica, . . .	M.	6·5	5·2	4·3	5·1	14·5	4·0	13·8	18·5
13.	Temple of Sun, . .	F.	5·8	5·7	4·4	5·1	14·5	4·1	12·7	18·4
14.	,, . .	M.	6·1	6·0	4·7	5·5	16·0	4·5	14·1	19·5
15.	Pachacamac, . .	M.	6·7	6·0	4·5	5·6	16·2	4·5	14·5	20·2
16.	,, . .	M.	6·3	5·8	4·5	5·3	15·0	4·0	13·2	19·0
17.	Santa, . . .	M.	6·2	5·4	4·3	4·9	14·6	3·8	13·3	18·5
18.	Rimac, . . .	M.	6·5	5·6	4·5	5·0	14·7	3·8	13·2	19·2
19.	Pachacamac, . .	F.	6·6	6·0	4·6	5·1	15·5	4·1	13·5	19·8
20.	,, . .	M.	6·6	5·7	4·2	5·2	15·5	4·4	13·0	19·4
21.	,, . .	F.	6·3	5·5	4·2	5·0	14·5	3·7	13·2	18·5
22.	,, . .	M.	6·3	5·3	4·4	4·6	14·0	3·9	13·0	18·7
23.	,, . .	M.	6·4	5·5	4·3	5·2	14·8	4·0	13·2	19·0
24.	,, . .	F.	6·2	5·5	4·4	5·0	13·6	3·8	12·6	18·7
25.	,, . .	F.	6·1	5·9	4·6	5·2	15·2	4·1	13·2	19·2
26.	,, . .	M.	6·2	5·8	4·3	4·9	14·5	4·1	12·6	18·7
	Mean, . .		6·32	5·62	4·06	5·18	14·96	4·12	13·27	19·10

In his earlier observations, as has already been seen, Dr. Morton was led to believe "that the long-headed Peruvians were a more ancient people than the Inca tribes, and distinguished from them by their cranial configuration." This opinion, however, he subsequently abandoned, and set forth as his final belief that the elongated Peruvian head was artificially produced. But the materials upon which this later opinion was founded are still accessible to the inquirer, along with much additional evidence; and the comprehensive conclusions which upon the theory of a homogeneous cranial type, of which this is one of the most essential foundations, justify a reconsideration of the proofs. Few who have had extensive opportunities of minutely examining and comparing normal and artificially formed crania, will, I think, be prepared to dispute the fact that the latter are rarely, if ever symmetrical. The application of pressure on the head of the living child can easily be made to change its natural contour, but it cannot give to its artificial proportions that harmonious repetition

of corresponding developments on opposite sides which may be assumed as the normal condition of the unmodified cranium. But in so extreme a case as the conversion of a brachycephalic head averaging about 6·3 in longitudinal diameter, by 5·3 in parietal diameter, into a dolichocephalic head of 7·3 by 4·9 in diameter, the retention of anything like the normal symmetrical proportions is impossible. Yet the dolichocephalic Peruvian crania present no such abnormal irregularities as could give countenance to the theory of their form being an artificial one; while peculiarities in the facial proportions confirm the idea that it is of ethnic origin, and not the product of deformation. Mr. Blake derived his opinions from observations made upon numerous examples brought under his notice among the extensive cemeteries of the great Peruvian desert of Atacama; and having enjoyed the advantage of his co-operation in comparing the selected examples brought home by him, with others included in the extensive collection formed by the late Dr. J. C. Warren of Boston, I have the more confidence in stating the following conclusions arrived at by such means.

The dolichocephalic Peruvian skull is small, narrow, and greatly elongated. In several which were measured, the average distance from a vertical line drawn from the meatus auditorius externus to the most prominent part of the frontal bone was only 2·7 inches, while from the same line to the most prominent part of the occipital bone it was 4·3 inches. Fully two-thirds of the cavity occupied by the brain lies behind the occipital foramen, and the skull, when supported on the condyles, falls backward. Compared with brachycephalic skulls, the forehead is low and retreating; the temporal ridges approach near each other at the top of the head: a much larger space being occupied by the temporal muscles, between which the skull seems to be compressed. The zygoma is larger, stronger, and more capacious, and the whole bones of the face are more developed. The superior maxillary bone is prolonged in front, and the incisor teeth are in an oblique position. The bones of the nose are prominent, the orifices larger, and the cribriform lamella more extensive. The bony substance of the skull is thicker, and the weight greater. Some of those characteristics would require to be determined from the minute comparison of a much larger number of skulls before they could be accepted as generic characteristics; but a sufficient number of them recur on all observed examples to place beyond question that the elements of difference between the Peruvian brachycephalic and dolicho-

cephalic skulls amount to something greatly more radical than could be effected by any artificial change in the form of the calvaria. The woodcut (Fig. 59) illustrates the characteristics of the elongated Peruvian skull, as exhibited in one of those brought by Mr. Blake from an ancient cemetery on the Bay of Chacota; and Table III. includes three crania, selected by him from a very large number as fair average specimens of this type of skull. It is not at all

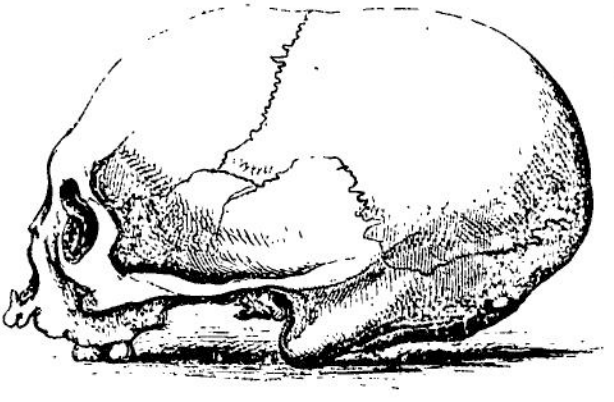


FIG. 59.—Peruvian Dolichocephalic Skull.

necessary for the confirmation of the opinion, reasserted here, that there are two essentially distinct types of Peruvian crania, to affirm that the form of the elongated skull never owes any of its peculiarities to artificial compression. Both forms of cranium are frequently found bearing unmistakable evidence of having been more or less distorted by this process. The depressed frontal bone has, in many cases, been produced or exaggerated by such means; and wherever this has been carried to a great extent, it is accompanied not only by a corresponding enlargement of the posterior portion of the cranium, but also by a lateral expansion of the parietal bones, which almost invariably exhibit considerable inequality and unsymmetrical variation between the two sides. But of several hundred skulls of the elongated type examined by Mr. Blake, a large proportion exhibited no certain signs of distortion; while an examination of brachycephalic Peruvian crania, with artificially depressed frontal bones,—of which I have had opportunities of studying a considerable number in different collections,—has disclosed no indication of their being thereby converted into those of the normal dolichocephalic form. Fig. 58 illustrates the commonest results of simple compression, when applied to the brachycephalic head, by

means of which the frontal bone is flattened obliquely, and the whole cerebral mass is thrown back; until in extreme cases, as among the Chinooks on the Columbia River, the skull resembles that of a dog. In other cases, hereafter referred to, the pressure applied equally in opposite directions, compresses the skull antero-posteriorly, till it becomes an elevated disc; or forces it into the most irregular and monstrous deformities. The prematurely ossified sutures frequently show the arrestment of osseous development; but even in the extremest of such examples of modified conformation, some distinctive traces of the normal type generally indicate the ethnical group to which they belong.

Among the numerous interesting illustrations of Peruvian characteristics obtained by Mr. Blake from ancient cemeteries on the Pacific coast, the most valuable for the purpose now in view, are the skulls of two children, both of the dolichocephalic or elongated type; but the one evidently in a normal condition, while the other betrays manifest traces of artificial deformation. It is impossible to examine the former without feeling convinced that it illustrates a type of head entirely distinct from the more common brachycephalic crania, while the latter shows the changes wrought by compression: very considerably altering its shape and relative development, but still leaving no doubt as to its generic dolichocephalic proportions. Figures 60, 61 exhibit the unaltered skull. It is that of a child, which, judging chiefly from the state of the dentition, may be pronounced to have been about seven years of age. It is an exceedingly well-proportioned symmetrical skull, unaltered by any artificial appliances, and will be observed to present the most striking typical contrast, if compared with an unaltered juvenile skull of the brachycephalic type from the Peruvian cemetery of Santa, engraved in the *Crania Americana*, Plate VII.

The other elongated skull, exhibited in Figures 62, 63, is of the same type as the previous one, but considerably altered by compression. The forehead is depressed, and the frontal suture remains open. It is that of a child of about five years of age, and is proportionally less; but as the process of cranial compression is completed in infancy, those two juvenile skulls illustrate the changes wrought by its means even more effectually than adult crania. The comparative measurements are as follows. The first column exhibits the relative proportions of the normal dolichocephalic Peruvian child's skull, Fig. 60; the smaller measurements in the

second column indicate those of the compressed skull, Fig. 62; and the third column presents those of another skull of a child, also about five years old, and of the same type, procured from that part of the sandy tract of Atacama which is nearest Arica, and

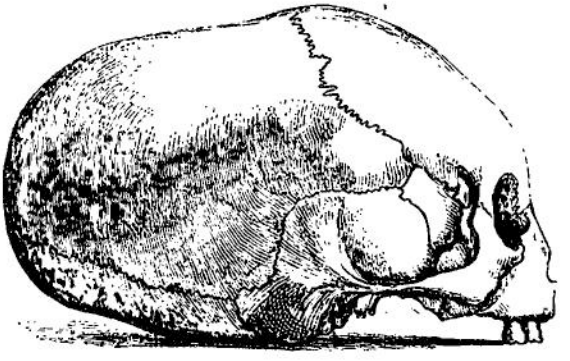


Fig. 60.—Peruvian Child's Skull, Normal.

therefore from the same locality explored by Mr. Blake. It is engraved in the *Crania Americana*, Plate II. It contrasts strikingly

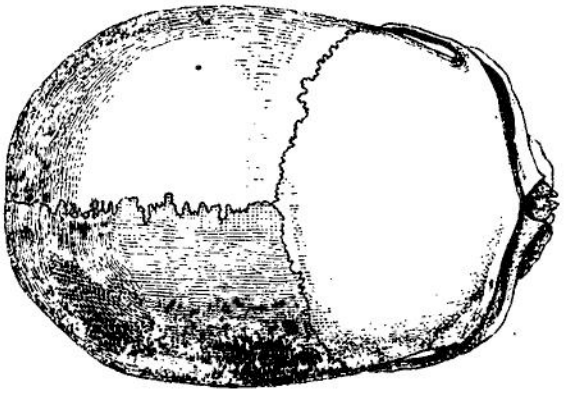


Fig. 61.—Peruvian Child's Skull, Normal.

with the Santa juvenile cranium already referred to, the measurements of which occupy the fourth column :—

Longitudinal diameter, . . .	6·6	6·1	6·9	5·4
Parietal diameter, ...	4·6	4·4	4·5	5·4
Frontal diameter, ...	3·3	3·1	3·7	4·0
Vertical diameter, ...	4·8?	4·3?	4·3	4·6

From observations carried on in the cemeteries of Peru, Mr. Blake was led to the conclusion that the distinguishing traits, thus far noted. between two classes of the ancient Peruvians, are not limited to the crania, but may be discerned in other traces of

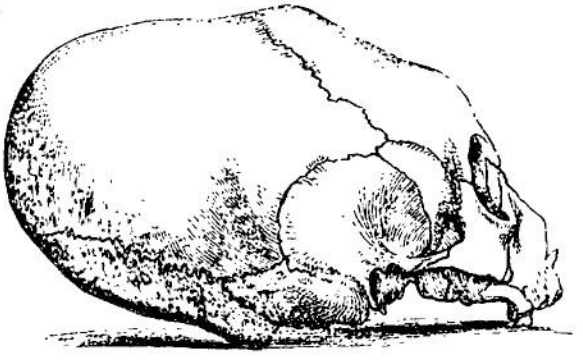


FIG. 62.—Peruvian Child's Skull, Abnormal.

their physical organization. In describing those of the short or brachycephalic type of cranium, he adds: "The bones of the latter struck me as larger, heavier, and less rounded than those of the former (the elongated crania), and in the larger size of the hands

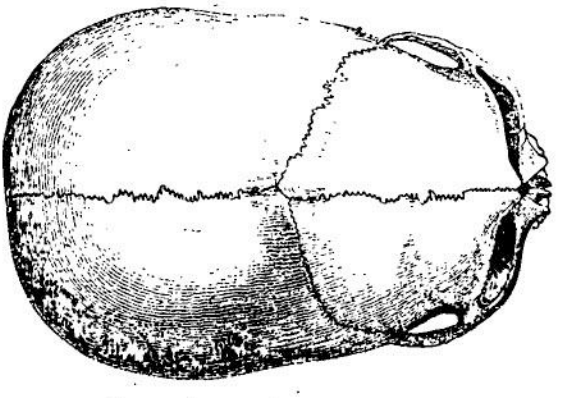


FIG. 63.—Peruvian Child's Skull, Abnormal.

and feet they also present a noticeable difference. The remarkable narrowness and delicacy of the hands, and the long and regularly-formed finger-nails of the former, are strong evidence that they were unaccustomed to severe manual labour, such as must have been required for the construction of the great works of which

the ruins remain. In all the cemeteries examined, where skulls of the rounded form have been found, those which are elongated have also been obtained." Remembering, however, that the sepulchral rites of the royal and noble Inca race were commonly accompanied by human sacrifices, it is in no degree surprising that the crania of the two distinct classes, noble and serf, should be found deposited together in the same grave. After a minute comparison of all the brachycephalic Peruvian crania in the Morton collection, it appears to me that these also admit of subdivision into two classes distinguished by marked physiognomical diversity, corresponding in some respects to the characteristics recognised by M. Pruner-Bey as furnishing evidence for a subdivision of the ancient crania of Egypt into two ethnical groups, which he designates *type fin* and *type grossier*. The bones of the face in the one are small and delicate, while the other exhibits the characteristic Mongol maxillary development and prominent cheek-bones. In the following table, Nos. 1-4 are the carefully selected examples procured by Mr. Blake during his journey in Peru, and the others are from the Boston and Philadelphia collections :—

TABLE III.—PERUVIAN DOLICHOCEPHALIC CRANIA.

	LOCALITY.		L. D.	P. D.	F. D.	V. D	I. A.	I. L.	O. F. A.	H. C.
1.	Atacama,	M.	7·2	5·2	3·6	5·1	...	...	...	...
2.	,,	M.	7·3	4·9	3·3	4·9	...	...	...	...
3.	,,	M.	7·0	4·7	3·2	5·1	...	...	...	...
4.	,,	M.	7·1	5·2	3·2	5·0	14·1	4·0	15·0	20·0
5.	S. of Arica,	M.	6·9	5·3	3·6	5·2	14·6	4·0	...	19·8
6.	Peru,	M.	7·2	5·3	3·5	5·6	14·6	4·0	...	20·0
7.	,,	M.	7·0	4·9	3·0	5·3	14·0	4·1	...	19·0
8.	,,	F.	7·2	5·1	3·5	5·2	13·9	4·0	...	20·0
9.	Arica,	M.	7·3	5·3	4·3	5·3	14·0	4·3	15·0	19·8
10.	Atacama,	M.	7·2	5·5	4·4	5·1	14·8	4·1	13·7	20·2
11.	Titicaca,	M.	6·8	5·4	4·8	5·3	14·8	4·2	...	19·4
12.	Royal Tombs,	F.	6·8	5·2	3·8	5·3	14·1	4·0	...	19·4
13.	Pachacamac,	M.	6·8	5·4	4·5	5·3	14·7	4·2	14·1	19·5
14.	Peru,	F.	5·8	4·0	2·8	3·9	14·8	...	14·0	19·6
15.	,,	M.	6·0	4·0	3·0	3·9	14·9	...	14·9	19·9
16.	,,	M.	6·3	3·8	2·6	3·5	14·5	...	14·5	19·8
	Mean		6·49	4·95	3·57	4·94	14·45	4·10	14·46	19·72

In some rare cases not only are crania of diverse forms found in the same grâve, but the head appears to have been embalmed, and deposited separately in the tomb alongside of bodies interred

in the more usual way. In Plate I. of the *Crania Americana*, Dr. Morton has introduced a view of an embalmed head recovered by Mr. Blake from the Peruvian cemetery at the Bay of Chocota, but without giving any detailed description of it, though in several respects it is very remarkable. It is from the same locality as the crania already described, where it lay in its present condition, detached, and carefully preserved without the body. It appears to have been prepared by desiccation, without the use of resins or other antiseptics, and was enveloped in a thick cotton bag. From the manner in which the neck is drawn together, the preservative process to which it was subjected must have been applied very soon after death. It is unique, so far as the observations of its finder extend, and presents some striking points of dissimilarity to any of the crania already described; but its form has probably been modified by artificial means. The abrupt prominence of the superciliary ridge is increased by compression on the forehead, which has depressed the os frontis, and given greater lateral width to the head. It is remarkable also for its great height compared with its diameter. Measured from the most prominent part of the os frontis to the extreme projection of the occiput, it is 6·4 inches; from the most prominent protuberances of the parietal bones the diameter is 5·8 inches, and vertically, from a horizontal line drawn across the orifice of the ear to the highest part of the head, is 5·2 inches. The forehead is broad and high, and the nose prominent; the cheek-bones are strongly developed, the alveolar edges of the jaws obtusely arched in front, and the incisor teeth stand in a vertical position. The hair, which is brown, and slightly grey, is remarkably fine, waved in short undulations, with a tendency to curl. It has been neatly braided, and several of the plaited braids are passed across the forehead, for which purpose they have been lengthened by the addition of false hair, so ingeniously joined as nearly to escape detection.

The teeth in this head, and in all the adult Peruvian skulls examined, are much worn. The incisors are ground down from their cutting edge to a broad flat surface, and the cuspidati have assumed a similar appearance. It is a condition common to the crania of primitive races where simple diet preserves the teeth, subjecting them to attrition without exposing them to decay. A nearly similar appearance is presented in those from ancient British barrows and cromlechs; though variations in the character of the food are sometimes traceable by means of corresponding

changes on the teeth. The Walla-walla Indians on the Columbia river occupy a barren waste, where they suffer greatly from the drifting sand. They subsist almost entirely upon salmon, dried in the sun, which, during the process, becomes filled with sand to such an extent that it wears away the teeth with great rapidity. It is rare, indeed, to meet with a Walla-walla Indian much beyond maturity whose teeth are not worn down to the gums. The corresponding attrition of the Peruvians' teeth Mr. Blake ascribes to a habit, still prevalent among the Indians, of chewing the leaf of the coca, mixed with a substance they call *llute*, made by compounding the wild potato with calcined shells and ashes obtained from plants rich in alkali.

Such are the most prominent characteristics of Peruvian crania, apart from the artificial conformation which many of them exhibit, in common with others both of ancient and modern times. Both brachycephalic and dolichocephalic crania have been subjected to compression, and moulded by its means into a variety of distorted forms; but there is no trace of the transformation of the one into the other. They remain essentially distinct, whether in their normal condition, or under all the variations begotten by compression in infancy; and furnish data altogether irreconcilable with the theory of one undeviating cranial type, shared by the Peruvians in common with other tribes and nations of the New World.

But in an inquiry into the physical characteristics of the Peruvian nation, we are by no means limited to the cranial or the osteological remains recoverable from its ancient cemeteries. Like the Egyptians, the Peruvians applied their ingenious skill to render the bodies of their dead invulnerable to the assaults of "decay's effacing fingers;" and, like the inhabitants of the Nile Valley, they were able to do so under peculiarly favourable circumstances of soil and climate. The colours on Egyptian paintings, and the texture of their finer handiwork: which have shown no trace of decay through all the centuries during which they have lain entombed in their native soil or catacombs; fade and perish almost in a single generation when transferred to the humid climates of Paris or London. The natural impediments to decay probably contributed, alike in Egypt and Peru, to the origination of the practice of embalming. The cemeteries already referred to are situated in a region where rain seldom or never falls; and the dryness of the soil and atmosphere, when added to the impregna-

tion of the sand with nitrous salts, almost precludes the decay of animal or vegetable matter, and preserves the finest woollen and cotton textures, with their brilliant dyes undimmed by time. By the same means we are enabled to judge of the colour and texture of the hair, the proportions and delicacy of the hands and feet, and the comparative physical development of the two seemingly different races at various stages, from infancy to mature age. When we pass from the southern continent of America to the seats of ancient native civilisation lying to the north of the Isthmus, a different class of evidence, in like manner, enlarges our range of observation. The artistic ingenuity of the ancient Peruvian potter left valuable memorials of native portraiture; and the Mexican picture-writing, with the sculptures and terra-cottas, the products of Toltec and Aztec ceramic art, in like manner contribute important evidence illustrative of the physiognomy and physical characteristics of the ancient races of Anahuac. Still more, the elaborate sculptures and stuccoed bas-reliefs of Central America, perpetuate in unmistakable characters the records of an ancient race, differing essentially from the modern Indian; and the study of their cranial characteristics confirms the deductions derived from other independent sources.

The traditions of the Mexican plateau pointed to the comparatively recent intrusion of the fierce Mexican on older and more civilized races; and various observers have at different times been tempted to trace associations between the ancient Mound-Builders of the Ohio, the elder civilized race of Mexico, and the Peruvians whose peculiar remains are recovered from the tombs around Lake Titicaca. The predominant Mexican race, at the era of the Conquest, appears from evidence of various kinds, including the portraiture in ancient native paintings and terra-cottas, to have been derived from one of the great stocks of the Red Indian tribes of the northern continent. The features represented in the Mexican paintings are thoroughly Indian, with the exception of the remarkable Dresden Codex: where, on the contrary, a striking correspondence is appa-

FIG. 64.—Terra-Cotta, Bay of Honduras.

rent between its portraiture and the bas-reliefs of Palenque. A comparison of the terra-cotta figured here, from the original in the collection of the Society of Antiquaries of Scotland, with others already produced in previous chapters, from various localities, illustrates the same ethnic diversity. This example was found in a tumulus on the Bay of Honduras, and as strikingly corresponds to some of the Mexican paintings as the majority of the Mexican terra-cottas differ from them. The seats of ancient civilisation, both in Asia and Europe, were confined, through all their earliest historic ages, to fertile and genial climates and warm latitudes of the south. The north contributed the hardy barbarians to whom, in their degeneracy, they became a spoil and a prey. It is only in modern times that Transalpine Europe has given birth to a native northern civilisation; while in Asia its northern latitudes still remain in the occupation of wandering hordes, descended from the spoilers who ravaged the elder empires of Asia, and shared with the barbarians of Europe in the dismemberment of decaying Rome.

It is not from a mere accidental coincidence that we are able to recover traces of a nearly similar succession of events in the New World. Civilisation took root for a time in the Mississippi Valley, whether self-originated, or as an offshoot from the more favoured scenes of its mature development; but the great plateaus of Mexico and Peru were like well-provisioned and garrisoned strongholds, where the spontaneous fertility of tropical climates relieved the wanderers who settled there from the all-absorbing struggle which elsewhere constitutes the battle with nature for life; and the physical character of the country protected them alike from the temptations to wander, and the instability of settled communities in a nomade country. Yet they could not escape the vicissitudes which have befallen every nation, whose wealth and luxury have so far surpassed the acquisitions of its neighbours as to tempt the cupidity of the barbarian spoiler; and the beautiful valleys of Mexico appear to have experienced successive revolutions akin to those which render the ethnology of Italy's equally smiling soil and delightful climate so complicated and difficult. There are traditions of Olmecs, Miztecas, and Zapotecs, all highly-civilized precursors of the ancient Toltecs, who entered on the plateau according to most authorities about A.D. 600; and whose independent rule is supposed to have endured for nearly four and a half centuries. Then came the migration from the mythic Aztalan of the north, and the founding of the Aztec monarchy. The details

of such traditions, with their dates and chronology, are of little value. But the general fact of the successive intrusion of conquering nations, and the consequent admixture of tribes and races, cannot be doubted. The civilized countries beyond the southern isthmus may have contributed some of them, and the dispersed Mound-Builders of Ohio may have been the intruders of other centuries; while the regions immediately surrounding the high valleys more frequently furnished the invading spoilers. But one result is to throw considerable uncertainty on any inferences drawn from cranial observations, unless deduced from numerous instances, accompanied with accurate data as to the circumstances and probable age of the exhumed remains. Of the crania obtained by Dr. Morton, only eight were of older date than the Conquest; and the names of Toltec, Aztec, and other national distinctions are frequently attached to such on no satisfactory grounds. A general uniformity is traceable in a considerable number of Mexican crania, but not without such notable exceptions as to admit of their division also into distinct dolichocephalic and brachycephalic groups, as in the following tables:—

TABLE IV.—MEXICAN DOLICHOCEPHALIC CRANIA.

	LOCALITY.		L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A.	H. O.
1.	Mexico, . .	M.	7·1	5·0	3·8	5·5	...	4·2	...	19·8
2.	Otumba, . .	M.	7·1	5·6	4·6	5·5	15·5	4·1	15·0	20·2
3.	Cerro de Quesilas, .	M.	7·1	5·7	4·4	5·2	15·9	4·0	14·0	20·5
4.	Acapacingo, . .	F.	6·9	5·2	4·2	5·4	14·5	4·1	14·0	19·2
5.	Tacuba, . .	M.	7·1	5·6	4·5	5·4	15·2	4·3	14·2	20·0
6.	,, . . .	M.	7·0	5·3	4·3	5·3	14·5	4·1	14·0	20·0
7.	Mexico, . . .	M.	7·0	5·4	4·3	5·3	15·0	4·1	14·0	19·8
8.	,, . . .	M.	7·1	5·5	4·4	5·2	15·8	4·1	14·0	20·4
	Mean, . . .		7·05	5·41	4·31	5·35	15·20	4·12	14·17	19·99

Of Table IV., No. 1 is in the collection of Dr. Mason Warren, of Boston, where it is simply marked "Mexican, ancient." No. 2, from an ancient tomb at Otumba, in Mexico, is noted by Dr. Morton (Plate LXI.) as "approaching nearer to the Caucasian model, both in proportions and in facial angle." No. 3, on the same authority, is characterized as "a relic of the genuine Toltecan stock, having been exhumed from an ancient cemetery at Cerro de Quesilas, near the city of Mexico." No. 4 is also from an ancient tomb near that city, where it was exhumed along with some of the remarkable terra-cottas, pottery, masks, etc., now preserved with it in the col-

lection of the American Philosophical Society at Philadelphia. The remainder are in the collection of the Academy of Natural Sciences.

TABLE V.—MEXICAN BRACHYCEPHALIC CRANIA.

	LOCALITY.		L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A.	H. C.
1.	Mexico, . .	M.	6·6	5·8	3·9	5·9	14·7	4·3	...	20·0
2.	,, . .	M.	6·6	5·7	4·0	...	15·0	...	14·5	20·0
3.	Otumba, . .	M.	6·3	5·3	4·4	5·4	14·3	4·2	13·5	19·2
4.	,, . .	M.	6·6	5·3	4·4	5·4	14·0	4·0	14·0	19·3
5.	Tacuba, . .	M.	6·8	5·5	4·6	6·0	15·6	4·4	14·6	19·9
6.	San Lorenzo, .	M.	6·4	5·7	4·5	5·4	14·6	4·5	13·5	20·2
7.	Mexico, Modern, .	M.	6·6	5·3	4·3	5·2	14·6	4·1	13·6	19·0
	Mean, . . .		6·56	5·51	4·30	5·55	14·69	4·25	13·95	19·66

The brachycephalic group (Table v.) is also derived from crania in the Boston and Philadelphia collections. A comparison of those tables, along with incidental comments of Dr. Morton on some of the more remarkable examples, suffice to show how little dependence can be placed on any theory of homogeneous cranial characteristics pertaining to the races of Anahuac. From such evidences of the diversity of cranial type, which are found alike within the Mexican and Peruvian limits, we may admit, with the less hesitation, that a certain conformity may be traced between some of the ancient Mexican and Peruvian skulls and those of northern barbarous tribes. Notwithstanding the greater apparent proximity of Mexico than Peru, much more accurate cranial data have hitherto been obtained from the latter than the former country. The great collection of the Academy of Natural Sciences of Philadelphia is furnished with ample materials for the study of Peruvian craniology, and has been largely augmented in this department since Dr. Morton's death; but it is still very imperfectly supplied with illustrations of the more complicated ethnic characteristics of the Mexican plateau, and has no materials derived from the ancient cemeteries of Central America. Until intelligent native Mexican observers shall carry on extensive observations on the spot, and classify the ancient crania, by means of archæological and other trustworthy evidence, so as to furnish some means of determining what is the typical Olmec, Toltec, and Aztec cranium, no satisfactory comparisons can be drawn between ancient Mexican crania and the corresponding types of the barbarous northern tribes. Unfortunately, the Spanish-American colonists of Mexico, Yucatan,

and Central America, have hitherto, with a few honourable exceptions, rather impeded than co-operated in any investigations calculated to throw light on the history and ethnology of those remarkable seats of a native American civilisation; and however the influence which France is now acquiring may be viewed in its political aspects, the scientific student can scarcely fail to regard it as a hopeful omen for the objects he has in view.

The Peruvians and Mexicans, with the ancient populations of Central America and Yucatan, constitute the Toltecan family, one of the two great divisions into which Dr. Morton divided his one American "race or species." The nations lying to the north of those seats of a native civilisation, were all classed by him into a distinct family of barbarous tribes, resembling the other in physical,

TABLE VI.—AMERICAN DOLICHOCEPHALIC CRANIA.

	TRIBE.		L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A	H. C.
1.	Seminole,	M.	7·1	5·6	4·7	5·5	15·0	4·1	14·8	20·3
2.	,,	M.	7·3	5·9	4·6	5·8	15·9	4·4	15·3	20·7
3.	,,	M.	7·0	5·6	4·7	5·4	15·0	4·1	14·7	20·2
4.	,,	M.	7·3	5·6	4·2	5·6	15·2	4·7	15·0	20·4
5.	,,	M.	7·0	5·9	4·5	5·8	14·7	4·6	14·2	20·5
6.	Cherokee,	F.	7·2	5·2	4·2	5·5	14·5	4·0	14·6	20·2
7.	,,	F.	7·0	5·3	4·1	5·4	14·5	4·0	14·0	19·5
8.	,,	M.	7·2	5·3	4·3	5·3	14·1	4·5	14·0	19·1
9.	Choctaw,	M.	7·2	5·0	4·2	5·5	14·6	3·9	14·7	19·2
10.	Sauk,	F.	7·4	5·9	4·6	5·5	15·3	4·7	14·2	20·2
11.	Ottigamie,	M.	7·0	5·9	4·7	5·5	15·0	4·2	14·2	20·9
12.	Chippewa,	M.	7·3	5·8	4·8	5·5	15·1	4·6	14·2	20·9
13.	,,	M.	7·2	5·5	4·3	5·5	14·8	4·1	14·6	20·2
14.	Pottowatomie,	M.	7·8	5·7	4·4	5·3	16·0	4·0	15·8	22·1
15.	Mississaga,	M.	7·0	5·2	4·3	5·2	13·8	4·1	14·2	19·5
16.	Delaware,	M.	7·8	5·4	4·6	5·1	14·4	4·2	14·5	20·0
17.	,,	M.	7·0	5·5	4·4	6·2	15·6	4·3	16·0	21·5
18.	Miami,	M.	7·6	5·3	4·3	5·5	15·0	4·1	15·5	20·5
19.	,,	M.	7·3	5·5	4·3	5·5	14·6	4·6	14·9	21·0
20.	Naumkeag,	M.	7·4	5·5	4·4	5·9	15·0	4·3	14·0	...
21.	,,	M.	6·9	5·0	4·2	5·3	14·3	3·9	14·4	19·8
22.	Assinaboine,	M.	7·6	5·8	4·6	5·1	14·9	4·3	14·9	21·2
23.	,,	M.	7·5	5·7	4·4	5·2	14·7	4·6	14·7	20·8
24.	Mandan,	F.	7·1	5·4	4·3	5·1	14·2	3·8	14·6	20·0
25.	,,	F.	7·0	5·3	4·1	5·3	13·9	4·2	14·1	19·8
26.	Ricara,	M.	7·0	5·2	4·1	5·1	13·5	4·0	14·0	19·5
27.	Mingo,	M.	7·1	5·5	4·5	5·2	14·7	4·1	14·5	20·2
28.	Menominee,	M.	7·1	5·8	4·1	5·5	14·7	4·0	...	20·3
29.	,,	M.	7·1	5·4	3·9	5·2	13·3	4·4	...	19·3
30.	,,	M.	7·5	5·4	4·0	5·5	14·5	4·2	...	20·6
31.	Minetari,	F.	7·3	4·4	4·4	5·1	14·1	4·1	14·7	20·2
	Mean,		7·24	5·47	4·36	5·42	14·67	4·23	14·62	20·29

but differing from it in intellectual characteristics. Yet, as we have seen, even Dr. Morton recognised some differences among them; and Professor Agassiz speaks of their tendency to split into minor groups, though running really one into the other. The annexed tables, however, will show that the differences are of a far more clearly defined nature, and in reality embrace well-marked brachycephalic and dolichocephalic forms; while of these, the latter seems the most predominant. The examples are chiefly derived from the Philadelphia collection, though with additional illustrations from the Boston cabinets already referred to, as well as from Canadian collections. Table VI., which illustrates the form of head most widely diverging in proportions from the theoretical type, shows in reality the prevailing characteristics of the north-eastern tribes, and could easily be greatly extended. The opposite or brachycephalic cranial formation is illustrated in Table VII.

TABLE VII.—AMERICAN BRACHYCEPHALIC CRANIA.

	TRIBE.	L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A.	H. C.
1.	Muskogee,	6·8	5·8	4·2	5·6	15·4	4·3	15·0	20·0
2.	,,	6·6	5·7	4·5	5·3	15·3	4·5	14·0	20·4
3.	Uchee,	6·8	5·4	4·3	5·5	15·0	4·4	14·3	20·1
4.	Minsi,	6·7	5·0	4·2	5·3	14·0	4·1	13·8	19·3
5.	Natick,	6·7	5·2	4·1	5·7	14·5	4·1	14·3	19·0
6.	,,	6·7	5·2	4·3	5·3	14·2	3·9	14·1	19·1
7.	Dacota,	6·7	5·7	4·2	5·4	14·7	4·4	13·5	19·8
8.	,,	6·8	5·7	4·3	5·5	15·1	4·4	14·4	20·1
9.	Pawnee, F.	6·6	5·4	4·4	4·9	13·7	4·3	13·0	19·1
10.	,,	6·6	5·5	4·1	5·4	15·0	4·4	14·0	19·5
11.	,,	6·5	5·5	4·0	5·4	14·8	4·4	14·1	19·3
12.	,,	6·7	5·6	4·3	5·5	15·1	4·4	14·2	19·6
13.	Chetimachee,	6·5	5·7	4·3	5·9	15·5	4·1	14·0	19·1
14.	Chimuyan,	6·5	5·4	4·2	5·2	14·3	3·8	13·4	18·8
15.	Osage,	6·6	5·7	4·3	5·2	14·8	4·7	13·8	19·5
16.	,,	6·5	5·9	4·6	5·3	15·1	4·1	13·4	19·5
17.	Creek,	6·9	5·7	4·6	5·4	15·5	4·7	14·4	20·4
18.	Choctaw,	6·5	5·1	4·0	4·7	12·5	4·1	13·0	18·7
19.	,,	6·4	5·1	4·0	5·1	14·0	4·0	...	19·7
20.	"Ohio Mound," F.	6·4	5·3	3·9	5·0	14·2	4·0	...	19·0
21.	Goajiro,	6·7	5·3	...	5·2	...	...	13·4	19·3
22.	,,	6·5	5·1	...	4·9	...	...	13·0	18·5
	Mean,	6·62	5·45	4·24	5·30	14·63	4·25	13·85	19·44

But I now turn to the region around the northern lakes, where opportunities of personal observation first suggested to me the obvious discrepancies between the actual evidence disclosed by exhumation on the sites of native sepulture, and the theory of a

typical unity manifested in the cranial characteristics of the most widely-separated tribes and nations of the continent. The Scioto Mound skull, characterized by Dr. Morton as "the perfect type of Indian conformation to which the skulls of all the tribes from Cape Horn to Canada more or less approximate," presents the remarkable anterior development of a cranium whereof nearly two-thirds of the cerebral mass was in front of the *meatus auditorius externus;* whereas in the elongated Peruvian skull, unaltered by artificial means, this is nearly reversed: showing by the proportions of the cerebral cavity that the larger mass of the brain lay behind the ear. These types may be considered as representing the two extremes; but both of the great stocks between which the northern region around the great lakes has been chiefly divided since the first intrusion of Europeans, belong to the dolichocephalic division. Those are the Algonquins and the Iroquois, including in the latter the Hurons, who, with the Petuns, Neuters, and Eries, all belonged to the same stock, though involved in deadly enmity with each other. In the supposed typical Mound skull the longitudinal, parietal, and vertical diameters vary very slightly; and as the Mexican and Peruvian crania chiefly attracted Dr. Morton's attention, and are illustrated minutely, as a series, in his great work: it only required the further theory, which referred all the elongated skulls to an artificially modified class, to confirm in his mind the idea of one peculiar form of cranium pertaining exclusively to the New World.

To the theoretical type of a head very nearly corresponding in length and breadth, though not in height, the more numerous class of Peruvian and Mexican brachycephalic crania unquestionably approximate. Of one of the former, from the Temple of the Sun (Plate XI.), Dr. Morton remarks: "A strikingly characteristic Peruvian head. As is common in this series of skulls, the parietal and longitudinal diameter is nearly the same," viz., longitudinal, 6·1; parietal, 6·0; and, tested by this standard, he was even more justified in recognising marked points of correspondence between the Mound skulls, and what he calls "the Toltecan branch of the American race," than might seem reasonable from the miscellaneous character of the crania referred to by him as "Mound skulls." But the moment we test by actual measurement, a very wide difference is apparent between the brachycephalic crania of the class referred to, and the prevailing form of head in many of the northern tribes, as among the Algonquins, Hurons, and Iroquois. The Algonquin

stock are represented by Ottawas, Mississagas, Chippewas, and other tribes, within the area of Upper Canada and along the shores of Lake Superior. Of living Indians belonging to Iroquois and Algonquin tribes I have examined, and compared by the eye, many at widely-scattered places, from the St. Louis River, at the head of Lake Superior, to the Saguenay, and Lake St. John, in Lower Canada. Physiognomically they present the large and prominent mouth, high cheek-bones, and broad face, so universally characteristic of the American Indian; but they by no means possess in a remarkable degree the wide massive lower jaw, which has been noted as of universal occurrence. The absence of the aquiline nose is also noticeable, as it is frequently a characteristic of the true Indian in contradistinction to the Esquimaux.

The eye may be fully depended on for physiognomical characteristics; though of little service in testing minuter variations of cranial proportions, especially when dependent on observations made on the living head, covered with the thickly-matted and long coarse hair of the Indian. Nor are actual measurements very readily obtained; for other obstacles—even more difficult to surmount than such natural impediments to observation,—interfere, and enlist both the superstitions and the fears of the Indian in antagonism to the inquisitions of science. I have been baffled repeatedly in attempts to induce an Indian to submit his head to the dreaded application of the callipers; and have found him not only resist every attempt, backed by arguments of the most practical kind, but on the solicitation being pressed too urgently, have seen him tremble, and manifest the strongest signs of fear, not unaccompanied with anger, such as made retreat prudent. In other cases where the Indian has been induced to submit his head to examination, his squaw vehemently protested against the dangerous operation. The chief fear seems to be lest the secrets of the owner should be revealed to the manipulator; but this rather marks the more definite form of apprehension in the mind of the Christianized Indian. With others it is simply a vague dread of power being thereby acquired over them, such as Mr. Paul Kane informs me frequently interfered to prevent his obtaining portraits of the Indians of the North-west, unless by stealth.

The following Table (VIII.) embodies the results of examinations of twelve living representatives of Algonquin tribes, including six Chippewas at the Indian reserve on Lake Couchiching, three Ottawas from Lake Huron, and three Abenakis from the St. Maurice.

TABLE VIII.—ALGONQUIN INDIANS.

	NAME.	L. D.	P. D.	F. D.	I. M. A.	H. C.
1.	Kobsequan, . . .	7·4	6·0	5·0	14·8	22·3
2.	Nowkeisegwab, . .	7·1	6·0	5·4	15·4	22·1
3.	Pahtahsega, . . .	7·3	5·8	5·4	15·0	22·6
4.	Shilling, Joseph, . .	7·5	6·1	5·6	14·4	22·9
5.	Shilling, Jacob, . .	6·9	6·0	5·1	14·7	22·0
6.	Snake, William, . .	7·1	6·0	5·5	15·1	22·0
7.	Kahgosega, . . .	7·4	5·8	5·0	15·2	21·6
8.	Ganahwahbi, . .	7·2	5·9	4·8	14·9	21·8
9.	Assikinack, . . .	7·2	6·0	4·7	14·2	22·4
10.	Nanahmahbiquan, .	7·3	5·9	5·1	14·3	22·0
11.	Nowgosedah, . . .	7·2	6·0	5·4	15·0	22·3
12.	Mosunhkirhine, . .	7·4	6·6	5·0	14·2	22·4
	Mean, . . .	7·25	6·00	5·17	14·77	22·20

Some of the measurements in the living head are necessarily affected by the hair, always coarse and abundant with the Indian. Others again, such as the vertical diameter, cannot be taken. But the mastoid processes are sufficiently prominent to leave little room for error in the measurement of the inter-mastoid arch; and this suffices to show the very exceptional approximation of the modern Algonquin head to the ancient type, in the proportional elevation of the vertex: in so far, at least, as it is illustrated by these examples. In the horizontal circumference some deduction must be made for the hair, to bring it to the true cranial measurement in all the living examples.

From the above measurements, along with other observations, the Abenakis and Chippewas appear to deviate less markedly from the assumed characteristics of the American cranial type than other northern races; and especially than is apparent on an examination of skulls belonging to the original Huron occupants of the greater part of the country around Lakes Simcoe and Couchiching, where the Chippewas more especially referred to are now settled.

The proportions thus given as characteristic of the widely-diffused Algonquin stock place it in the dolichocephalic division, of which Tables XI., XII., XIII. furnish evidence suggestive of a generally prevailing divergence among the northern tribes from the more common Peruvian, and the supposed Mound type. The extent of this divergence will be no less clearly seen by referring to some of the most characteristic examples furnished in the *Crania Americana*. The radical variation from the assumed typical proportions is obvious, for example, in the Miami cranium: the head

of a celebrated chief, eloquent, of great bravery, and uncompromising hostility to the whites; and is equally apparent in those of the Potowatomies, the Blackfeet, Menominees, and the Delawares. In most of those of which measurements are given by Dr. Morton, the longitudinal diameter is nearly, and in some more than two inches in excess both of the parietal and vertical diameters; and in other respects they differ little less widely from the characteristics of the brachycephalic crania.

Such are indications of data—derived from a source altogether unexceptionable in the present argument,—irreconcilable with the views so repeatedly affirmed, of a physiognomical, physiological, and, above all, a cranial unity characterizing the whole ancient and modern aborigines of the New World. But the Algonquins, Iroquois, and Hurons of the St. Lawrence valley and the Lake regions, which have been recognised by many writers as specially typical of the predominant characteristics of the northern Red Indian, furnish evidence equally confirmatory of the diversified physical characteristics of American nations. Of them Dr. Latham remarks: "The Iroquois and Algonquins exhibit in the most typical form the characteristics of the North American Indians, as exhibited in the earliest descriptions, and are the two families upon which the current notions respecting the physiognomy, habits, and moral and intellectual powers of the so-called Red race are chiefly founded."[1] In some respects, however, they present a striking contrast. The Algonquin stock, chiefly represented by the modern Chippewas, is only known to us as embracing rude hunter tribes; or where found under the protection of the government of the Province, and settled on the Indian reserves of Upper Canada, they illustrate in a remarkable manner the unstable condition of savage life prior to the introduction of any foreign disturbing elements: for they are, with very partial exceptions, more recent intruders within the Canadian clearings than the Europeans; and the extirpation of the aboriginal occupants of Canada is wholly ascribable to native wars.

In the brief interval between Cartier's first discovery of Canada, and its exploration and settlement by Champlain, the whole country between the Ottawa and Lake Simcoe appears to have been depopulated; and the Wyandots and allied tribes, driven westward by their implacable Iroquois foes, were settled in palisaded villages in the country around Lake Simcoe and the Georgian Bay. The Huron nation embraced four tribes among whom agriculture was

[1] *Varieties of Man*, p. 333.

systematically pursued: probably with all the greater assiduity that the restriction of their hunting-grounds by the encroachments of the Iroquois must have made them more dependent on its resources. To the south-west of this country, in the high ground between the Georgian Bay and Lake Erie, the allied nation of the Tiontonones was settled. The Niagara district was in like manner filled up by the Attiwendaronks or Neuters, of the same stock; and all along the river banks and smaller lake shores, traces of Indian villages and cemeteries prove that at an earlier date the whole country was filled up with a corresponding native population. The Wyandots, as they styled themselves, only became known to Europeans in their decline, and immediately before their extirpation. They were then in alliance with the Adirondacks against their common Iroquois foe, and probably a certain portion of the skulls found in Upper Canadian cemeteries belongs to the latter. But the Algonquin cranium, though less markedly dolichocephalic than the Huron or Iroquois skulls, belongs to the same class; and to one or other of these nearly all the Canadian crania may with little hesitation be assigned.

Of Indian skulls chiefly dug up within the district once pertaining to the Huron or Wyandot branch of the Iroquois stock, I had cursorily examined a considerable number, before my attention was fully drawn to the peculiar characteristics now under consideration. Since then I have carefully measured seventy-one Indian skulls belonging, as I believe, to the Wyandot or the Algonquin stock; and of this number have found only five exhibiting such an agreement with the assigned American type, as, judged by the eye, to justify their classification as true brachycephalic crania, though the tendency to the pyramidal form, occasioned by the angular junction of the parietal bones, is apparent in many of them. One, a very remarkable and massive skull, turned up at Barrie, on Lake Simcoe, with, it is said, upwards of two hundred others, exhibits the vertical occiput so very strikingly, that when resting on it, it stands more firmly than in any other position. This is, without doubt, the result of artificial compression; and in so far as fashion regulated the varying forms thus superinduced on the natural cranial conformation, it is suggestive of an intruder from the country lying towards the mouth of the Mississippi, where the ancient graves of the Natchez tribes disclose many skulls moulded into this form. No note has been preserved of the general character of the crania from which this one was selected, doubtless owing to its peculiar form. A minute examination of examples found in Canada

fails to confirm Dr. Morton's assignment of the flattened occiput as a predominant characteristic of the American head, but rather confirms its artificial origin. This feature will therefore more fitly come under review in the following chapter, along with other results of cranial compression.

The ethnical significance of occipital forms has been minutely discussed in a valuable monograph contributed by Dr. J. Aitken Meigs to the Transactions of the Academy of Natural Sciences of Philadelphia.[1] The conclusions he arrives at are: that the form of the human occiput is not constant, but varies even among individuals of the same race or tribe. He divides the different forms into three primary classes: 1st, The protuberant occiput, which is exhibited by the Esquimaux, Chippewas, Hurons, and more or less among thirty-six different American tribes or nations. 2d, The vertically flattened occiput he assigns as more or less prevalent among sixteen tribes, and characteristic of the Mound-Builders. 3d, The full and rounded or globular occiput characterizes nine American nations or tribes, and occurs occasionally in a greater number. But the final summary of Dr. Meigs goes further than this; and, treating as it does of occipital formation generally, it very effectually deals with all theories of radical diversities of human varieties or distinct species, in so far as this important subdivision of osteological evidence is concerned, by affirming, as the result of observations made on eleven hundred and twenty-five human crania, "that there is a marked tendency of these forms to graduate into each other, more or less insensibly. None of these forms can be said to belong exclusively to any race or tribe. None of them, therefore, can be regarded as strictly typical: for a character or form to be typical should be exclusive and constant." In his elaborate observations, Dr. Meigs has still left untouched the peculiarities which distinguish the female occiput. One elongated protuberant form appears to me to be found only in the female head; but a comparative estimate of the occipital variations in the two sexes, as exhibited in the different races, is necessary to complete this interesting inquiry.

It is worthy of note, in reference to the American type of skull, that, whereas Dr. Morton states, as the result of his experience, that the most distant points of the parietal bones are for the most part the parietal protuberances: on comparing fifty-one Canadian

[1] *Observations upon the Form of the Occiput in the Various Races of Men*, by J. Aitken Meigs, M.D. Philadelphia, 1860.

skulls, I have only found such to be the case in three, all of which were female. The widest parietal measurement is generally a little above the squamous suture, and in some examples a still wider diameter is given between the temporal bones. Somewhat minute observations, accompanied with measurements, of numerous examples in the unrivalled collection of the Academy of Sciences of Philadelphia, as well as in the collections at Washington and Boston, incline me to believe that this is a common characteristic of the American head.

TABLE IX.—WESTERN CANADA: HURONS.

	LOCALITY.		L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A.	H. C.
1.	Orillia,	M.	7·5	5·7	4·5	5·6	15·6	4·2	15·0	21·1
2.	,,	M.	7·4	5·5	4·4	5·4	14·7	4·5	...	20·6
3.	,,	M.	7·3	5·7	4·2	5·7	15·3	4·3	14·1	20·5
4.	,,	M.	7·5	5·6	4·2	5·4	14·7	4·3	14·6	21·1
5.	,,	M.	7·2	5·3	4·3	5·3	14·5	4·3	14·3	20·3
6.	,,	F.	7·3	5·5	4·3	5·1	13·7	4·2	14·3	20·5
7.	Owen Sound,	M.	7·0	5·5	4·2	5·0	13·8	4·0	14·0	19·8
8.	,,	M.	7·3	5·3	4·3	5·3	14·4	4·2	14·2	20·4
9.	,,	M.	7·2	5·4	3·8	5·2	14·5	3·9	14·2	19·9
10.	,,	M.	7·7	5·4	4·7	5·6	14·6	4·2	15·0	21·4
11.	,,	M.	7·5	5·9	5·1	5·5	15·0	4·3	15·6	21·8
12.	,,	M.	7·6	5·5	4·5	5·4	14·6	4·5	14·9	21·3
13.	Georgian Bay,	M.	7·6	5·6	4·2	5·4	14·6	4·7	15·0	21·1
14.	,,	F.	6·8	5·2	4·0	5·2	13·3	3·8	13·7	19·0
15.	,,	F.	7·4	4·9	4·2	5·3	13·3	...	14·1	20·0
16.	Oro,	M.	7·5	5·6	4·4	5·5	15·6	4·3	15·2	21·4
17.	,,	M.	7·4	5·4	...	4·3	15·2	4·0	14·9	20·4
18.	Medonte,	M.	7·6	5·2	3·9	5·6	14·8	4·5	15·2	20·5
19.	,,	M.	7·2	5·5	4·4	5·8	15·2	4·5	14·5	20·2
20.	,,	M.	7·6	5·6	4·5	5·6	15·4	4·2	15·0	21·4
21.	,,	M.	7·3	5·3	4·2	5·4	14·2	4·1	14·4	20·4
22.	Penetanguishene,	M.	7·8	5·6	4·6	5·9	15·5	4·5	15·6	21·3
23.	Barrie,	M.	6·9	5·5	4·1	5·1	14·0	4·1	...	19·7
24.	,,	M.	7·4	5·4	4·2	5·2	14·5	4·4	...	20·7
25.	,,	M.	7·3	5·3	4·2	5·4	14·6	4·1	14·4	20·5
26.	Tecumseth,	M.	7·3	5·6	4·4	5·5	14·5	4·9	14·4	20·2
27.	,,	F.	7·2	5·2	3·9	5·0	14·1	3·6	14·2	19·7
28.	,,	M.	7·9	6·0	4·6	5·7	16·0	3·4	16·1	20·0
29.	,,	F.	7·6	5·3	4·3	5·6	14·0	4·1	14·3	20·2
30.	,,	F.	7·5	5·2	4·1	5·1	13·4	4·2	14·8	20·5
31.	,,	M.	7·4	5·6	4·6	5·5	15·0	4·4	15·0	20·9
32.	,,	M.	7·6	5·4	4·2	5·7	15·1	4·4	15·3	20·9
33.	Whitchurch,	M.	7·5	5·3	4·2	5·7	15·1	4·2	14·6	20·4
34.	Newmarket,	M.	7·2	5·6	4·6	6·7	15·7	4·2	15·0	20·3
35.	,,	F.	7·6	5·2	4·1	5·3	14·7	4·0	14·1	19·5
36.	Oakridges,	M.	7·6	5·5	4·7	6·0	15·7	4·6	15·0	21·2
37.	,,	F.	6·8	4·8	4·2	5·0	13·6	4·0	13·2	18·9
	Mean,		7·39	5·44	4·31	5·43	14·66	4·23	14·65	20·49

The annexed tables (Tables IX., XI.) exhibit the relative proportions of crania found in Upper Canada, in so far as they can be shown by such a series of measurements. Embracing, as they do, indices of the comparative length, breadth, height, and circumference of seventy skulls, procured without any special selection from Indian cemeteries, lying, with only four exceptions, to the north of Lakes Erie and Ontario: they supply a series derived from a sufficient number to indicate some constant proportions, and to mark certain elements of contrast instead of comparison, when placed alongside of the corresponding relative proportions in the tables of brachycephalic crania.

The measurements in Table IX. are derived from thirty-seven crania obtained from Indian graves to the north of the water-shed between Georgian Bay and Lakes Erie and Ontario; and the greater number of them from ossuaries opened within the area lying between Lake Simcoe and Lake Huron. The graves, therefore, were situated in the ancient country of the Hurons, and may be assigned without hesitation to the tribes found in occupation of that country when first visited by the French Jesuit missionaries in the seventeenth century. The materials thus obtained embrace a sufficient number of examples to illustrate the average proportions and relative measurements of the Huron cranium, and to furnish satisfactory data for comparison with those of other Indian nations. Belonging as the Hurons did, to the same ethnic group as the Indians of the Iroquois League, though at deadly enmity with them, their skulls exhibit the same deviation from the assumed typical American head, in the great preponderance of the longitudinal diameter. In this respect, indeed, they exceed the relative proportions of the Algonquin crania, though these also decidedly belong to the dolichocephalic class.

Table X., which follows, rests, in part, on different authority from the preceding one. No. 1 supplies the proportions of the skull of the celebrated Mohawk chief, Joseph Brant (Tyendanaga), from a cast taken on the opening of his grave, at the interment of his son, John Brant, in 1852. Nos. 2-7 are from the *Crania Americana*, and include all the Iroquois and Huron examples given there. Nos. 8-10 are ancient skulls from the Island of Montreal, now in the Museum of M'Gill College, and correspond closely to the other crania of the Iroquois stock. As a whole it will be seen that these results agree in the main with those arrived at by my own independent observations; while a comparison of the tables

will be satisfactory to those who may still hesitate to adopt conclusions adverse to opinions reaffirmed under various forms by Dr. Morton, and adopted and made the basis of such comprehensive inductions by his successors.

TABLE X.—IROQUOIS CRANIA.

	TRIBE.		L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A.	H. C.
1.	Mohawk, Brant,	M.	7·8	6·0	5·0	...	15·6?	...	...	22·0
2.	Oneida, 33,	M.	7·5	5·6	4·1	5·8	14·4	4·3	14·9	20·8
4.	Cayuga, 417,	M.	7·8	5·1	4·2	5·4	14·2	4·5	15·5	20·8
4.	Huron, 607,	F.	6·7	5·6	4·1	5·2	14·5	3·9	14·0	19·2
5.	,, 15,	M.	7·2	5·3	4·3	5·5	15·0	4·4	14·2	19·8
6.	Iroquois, 16,	M.	7·5	5·5	4·5	5·7	15·2	4·5	15·1	20·8
7.	,, A.N.S.	M.	7·1	5·4	4·2	5·3	14·3	4·0	14·1	20·0
8.	Iroquet,	F.	6·8	5·2	5·0	5·3	...	...	13·7	19·3
9.	,,	M.	7·5	5·8	4·0	5·5	13·5	...	14·4	21·0
10.	,,	M.	7·0	5·5	4·7	5·5	13·5	...	14.5	20·7
	Mean,		7·29	5·50	4·41	5·47	14·47	4·27	14·49	20·44

The intimate relations in language, manners, and the traditions of a common descent, between those northern and southern branches of the Iroquois stock, render these two tables, in so far as they present concurrent results, applicable as a common test of the supposed homogeneous cranial characteristics of the aboriginal American, in relation to the area of the great lakes. Thirty-seven skulls, such as the first table supplies, the larger number of which belong without doubt to the Huron stock, or forty-seven as the result of both, may, perhaps, appear too small a number on which to base conclusions adverse to those promulgated by an observer so distinguished and so persevering as Dr. Morton, and accepted by writers no less worthy of esteem and deference. But, in addition to the fact that the measurements now supplied, are only the more carefully noted data which have tended to confirm conclusions suggested by previous examinations of a much larger number of examples, in addition to minute observations of the living representatives of the Indian tribes: an investigation of the materials which supplied the elements of earlier inductions, will show that only in the case of the ancient "Toltecan" tribes did Dr. Morton examine nearly so many examples; while, in relation to what he designated the "Barbarous Race," to which the northern tribes belong, even in Dr. Meigs' greatly enlarged catalogue of the Morton Collection, as augmented

since his death, the Seminole crania present the greatest number belonging to one tribe, and these only amount to sixteen.

TABLE XI.—CANADA: ALGONQUINS.

	LOCALITY.	L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A	H. C.
1.	Windsor,	7·0	5·7	4·7	5·7	15·2	4·3	14·5	20·1
2.	,,	7·0	5·7	4·5	5·7	16·1	4·0	14·4	20·1
3.	,,	7·4	6·1	4·9	5·7	...	4·5	15·5	21·4
4.	,,	6·6	5·3	4·2	5·5	14·5	4·2	13·5	19·0
5.	Burford,	6·5	5·2	4·1	5·0	13·4	4·0	13·0	18·4
6.	Grand River,	6·7	5·4	4·2	5·2	14·3	4·0	13·5	19·3
7.	,,	7·5	5·6	4·4	5·4	15·0	4·1	15·2	21·0
8.	Burlington Bay,	7·0	5·3	4·4	5·3	14·0	4·0	13·6	19·5
9.	,,	7·6	5·6	4·4	5·4	15·2	4·2	14·9	20·9
10.	Nelson, F.	7·5	5·2	4·2	5·5	14·0	4·6	15·0	20·4
11.	,,	8·2	5·5	4·3	5·5	14·9	4·3	15·5	21·0
12.	,,	7·7	5·9	5·3	5·4	15·0	4·7	15·3	21·5
13.	,, F.	7·3	5·5	4·1	5·1	14·0	4·3	14·7	20·5
14.	,, F.	7·3	5·4	4·0	5·2	14·4	4·3	14·4	20·5
15.	,, F.	7·2	5·4	3·7	5·3	14·3	4·0	14·3	19·8
16.	River Humber,	7·6	5·9	5·7	5·5	15·4	4·7	14·2	21·1
17.	,,	6·8	5·6	4·5	5·1	14·1	4·5	13·9	19·9
18.	,,	7·5	5·5	4·2	5·3	14·5	4·2	14·3	20·3
19.	Burwick,	7·5	5·7	4·2	5·6	15·3	4·5	14·9	21·0
20.	,,	7·2	5·1	4·4	5·6	14·3	4·3	14·7	21·0
21.	Peterboro',	7·7	5·5	4·9	5·3	15·4	4·6	15·0	21·1
22.	,,	7·4	5·3	4·2	5·3	13·8	4·2	14·1	20·6
23.	,,	6·5	5·2	3·9	4·9	13·3	3·8	13·7	19·2
24.	,,	7·0	5·2	4·3	5·2	13·8	4·1	14·2	19·3
25.	Rice Lake,	7·1	6·5	3·9	6·3	14·5	4·3	14·2	20·0
26.	Bay of Quinte,	7·9	5·8	4·5	5·3	14·3	4·9	14·8	21·7
27.	,,	7·0	5·5	4·2	5·0	14·0	4·6	13·9	20·5
28.	,,	7·4	6·0	4·8	5·3	14·6	4·7	14·5	20·9
29.	St. Maurice,	7·0	5·3	4·1	5·3	13·0	4·4	14·0	20·5
30.	,,	7·5	5·7	5·0	5·5	14·2	5·0	14·4	21·0
31.	,,	7·0	5·5	4·7	5·5	14·0	4·2	14·5	20·7
32.	Three Rivers,	7·4	6·5	5·0	5·1	14·2	4·6	15·0	21·9
	Mean,	7·25	5·58	4·43	5·37	14·42	4·35	14·42	20·44

In Table XI., the corresponding measurements of thirty-two Canadian skulls are given, the whole of which have been obtained from graves lying to the south and east of the true Huron country, towards the shores of Lakes Erie and Ontario, or on the north bank of the St. Lawrence. Some portions of Western Canada, including localities referred to, were occupied in the early part of the seventeenth century by tribes allied to the Hurons; but on their deserted areas the Algonquin tribes from the north and west have everywhere preceded the English settlers, and the greater number of the crania introduced in this Table may be assigned

without hesitation to Algonquin tribes. No. 24 is designated by Dr. Morton a Mississaga skull; and probably most, if not all, of those numbered consecutively from 16 to 28 belong to the same tribe. Nos. 29 to 32 are from Abenakis graves on the St. Maurice. The examples thus grouped together present a sufficient number to furnish some adequate approximation to the typical specialities of the Algonquin head. They exhibit, it will be observed, a greater preponderance in the characteristic excess of longitudinal diameter than is shown in the cognate Chippewa heads of Table VIII.; though all alike pertain to the same dolichocephalic class, and essentially contrast with the familiar brachycephalic type of Peru, and of the Mississippi Valley mounds.

But the term Algonquin, though apparently specially applied originally to Canadian tribes, is now used as a generic appellation of a very comprehensive kind, and embraces ancient and modern tribes extending from the Labrador and New England coasts to far beyond the head of Lake Superior. In this comprehensive use of the term, its application is chiefly based on philological evidence; and it points thereby to affinities of language connecting numerous and widely-severed nations throughout the whole area lying between the Rocky Mountains and the Atlantic.

The following Table (XII.) includes the measurements of thirty crania of New England tribes, partly derived from the *Crania Americana*, and the remainder obtained directly from observations made on the original skulls preserved in American collections. At Providence, Rhode Island, where, from the zeal manifested by the Historical Society of that State, I had hoped to obtain access to valuable materials in this and other departments of American ethnography and archæology, I was informed that a considerable collection of aboriginal crania, formerly preserved there, had been sent to Paris. There they will doubtless be appreciated as links in a comprehensive craniological series; but it is difficult to conceive of their possessing so great a value as on the locality where they constituted interesting memorials of an extinct nation and a nearly obliterated history. In the following Table, the measurements of the skulls of Natick Indians of Nantucket are given from Dr. Morton's Tables, but no record is preserved of the sex. From their smaller proportions it is probable that several of them may be female skulls, and thereby reduce the general results below the fair average of the Natick cranium. The mean proportions of the ten skulls are added to the Table, along with the total mean.

TABLE XII.—NEW ENGLAND CRANIA.

	LOCALITY.		L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A.	H. C.
1.	Massachusetts,		7·0	5·55	4·0	5·3	15·1	3·8	...	20·4
2.	Salem, Mass.,		6·9	5·0	4·2	5·3	14·3	3·9	14·4	19·8
3.	,,		7·4	5·5	4·4	5·9	15·0	4·3	14·0	18·7
4.	Milton, Mass.,		7·1	5·4	3·7	5·2	13·3	4·4	...	19·3
5.	Nahant,		7·1	5·8	3·9	5·5	14·7	4·0	...	20·3
6.	Nantucket,		6·7	5·2	4·1	5·7	14·5	4·1	14·3	19·0
7.	,,		6·9	5·4	4·3	5·3	14·3	4·1	13·9	19·9
8.	,,		6·9	5·1	4·1	5·1	13·1	4·1	14·0	19·2
9.	,,		6·7	5·2	4·3	5·3	14·2	3·9	14·1	19·1
10.	,,		7·0	5·1	4·1	5·2	13·3	4·1	13·9	19·5
11.	,,		6·7	5·3	4·5	5·3	14·0	4·0	14·4	19·5
12.	,,		7·4	5·7	4·4	5·7	15·0	5·0	15·0	21·5
13.	,,		6·9	5·2	4·2	5·5	13·3	4·1	13 7	19·5
14.	,,		7·0	5·1	4·3	5·1	13·5	4·1	14·2	19·0
15.	,,		6·9	5·1	4·0	5·2	13·9	4·1	14·1	20·2
16.	East Haven, Con.,		7·0	5·7	4·7	5·3	15·1	4·1	14·1	20·2
17.	Maine,		6·8	5·1	4·2	5·6	14·5	4·0	14·4	19·0
18.	Cumberland, R. I.,		7·4	6·1	4·9	4·8	14·3	4·2	...	21·3
19.	,,		7·5	5·6	3·7	5·9	15·3	4·2	...	20·7
20.	,,		7·2	5·3	4·6	5·2	14·5	4·1	...	19·7
21.	Tiverton, R. I.,	M.	6·8	5·7	4·0	5·5	15·0	4·2	14·4	19·8
22.	Rhode Island,	F.	7·3	5·2	4·0	5·2	14·5	4·0	14·7	20·4
23.	,,	M.	7·4	5·2	4·1	5·1	13·5	4·3	14·4	20·2
24.	,,	F.	7·4	5·5	4·1	5·7	14·8	4·2	15·2	20·7
25.	,,	F.	6·8	5·4	4·0	5·4	14·4	4·0	14·1	19·2
26.	,,	F.	7·0	5·2	3·8	5·3	14·0	3·8	14·2	19·6
27.	,,	M.	6·9	5·3	3·9	5·7	14·3	4·0	14·3	19·7
28.	,,	M.	7·0	5·5	4·1	5·6	15·5	4·1	14·4	20·1
29.	,,	M.	7·1	5·6	4·1	5·6	15·1	4·0	14·5	20·5
30.	,,	F.	7·4	4·9	3·8	5·2	13·3	3·9	14·7	20·1
	Natick mean,		6·91	5·24	4·23	5·34	13·91	4·16	14;16	19·64
	Total mean,		7·05	5·36	4·15	5·39	14·32	4·10	14·31	19·97

The New England tribes are described as having all presented a very uniform correspondence in their predominant characteristics. Dwight, in his *Travels in New England*, says of them, "They were tall, straight, of a red complexion, with black eyes, and of a vacant look when unimpassioned;" but he ascribes to them a good natural understanding, and considerable sagacity and wit. They are not, even now, entirely extinct, but, like others of the Eastern tribes that have been long in contact with the whites, it is difficult to find a pure-breed Indian among the remnants that still linger on some of their ancient sites. Judging, however, from the examples I have seen, it is probable that the red complexion, which Dwight assigns to the New England tribes, may have much more accurately justified the application of the term Red Indian to the aborigines first

seen by European voyagers along the northern shores of the American continent, than is now apparent when observing the olive-complexioned Chippewas, Crees, and other tribes of the west. Gallatin has grouped the New England Indians along with the Delawares, the Powhattans, the Pamlicoes, and other tribes of the Atlantic sea-board, extending as far south as North Carolina, under the comprehensive title of Algonquin-Lenapé. There is no doubt that important philological relations serve to indicate affinities running through the whole, and to connect them with the great Algonquin stock; while the essentially diverse Iroquois and Huron nations were interposed between them.

TABLE XIII.—ALGONQUIN-LENAPE CRANIA.

	TRIBE.		L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A.	H. C.
1.	Sauk,	M.	7·4	5·9	4·6	5·5	1 ·3	4·3	15·0	21·0
2.	Fox,	M.	7·0	5·9	4·7	5·5	15·3	4·7	14·2	20·9
3.	,,	M.	6·9	5·9	4·7	5·5	15·0	4·2	14·2	20·2
4.	Potowatomie,	M.	7·8	5·7	4·4	5·3	16·0	4·0	15·8	22·1
5.	Chippewa,	M.	7·3	5·8	4·8	5·5	15·1	4·6	14·2	20·9
6.	,,	M.	7·2	5·5	4·3	5·5	14·8	4·1	14·6	20·2
7.	Delaware,	F.	7·0	5·5	4·6	5·1	14·4	4·2	14·5	20·0
8.	,,	M.	7·8	5·4	4·4	6·2	15·6	4·3	16·0	21·5
9.	Minsi,	M.	6·7	5·0	4·2	5·3	14·0	4·1	13·8	19·3
10.	Manta,	M.	7·0	5·1	3·9	5·3	14·6	3·9	14·0	19·5
11.	Miami,	M.	6·9	5·5	4·3	5·5	14·5	4·1	14·0	19·8
12.	,,	M.	7·3	5·5	4·3	5·5	14·6	4·6	14·9	20·1
13.	,,	M.	7·0	5·1	4·2	5·6	14·5	4·2	14·1	19·5
14.	,,	M.	7·6	5·3	4·3	5·5	15·0	4·1	15·5	20·5
15.	Menominee,	F.	6·7	5·6	4·2	5·1	14·3	4·4	13·5	19·5
16.	,,	F.	6·8	5·4	4·3	5·5	14·0	3·2	14·0	19·7
17.	,,	M.	7·3	5·7	4·5	5·3	14·2	4·5	14·2	21·0
18.	,,	M.	6·8	5·6	4·2	5·5	14·7	4·1	14·1	19·9
19.	,,	M.	7·1	5·8	4·5	5·4	14·9	4·6	14·1	20·6
20.	,,	F.	6·9	5·7	4·5	5·3	15·3	4·5	14·0	20·4
21.	,,	M.	7·1	5·6	4·4	5·4	14·8	4·3	15·0	20·5
22.	,,	M.	6·6	5·4	4·2	4·9	14·2	3·9	13·6	19·3
23.	,,	M.	7·5	5·4	4·0	5·5	14·5	4·2	...	20·6
	Menominee mean,		6·98	5·58	4·31	5·32	14·54	4·19	14·06	20·17
	Total mean,		7·12	5·53	4·37	5·42	14·77	4·22	14·42	20·30

Under the double title of Algonquin-Lenapé have been included all the Indian nations originally occupying the vast tract of the North American continent, extending from beyond the Gulf of the St. Lawrence to the area of the Florida tribes, and claiming the whole territory between the Mississippi and the sea; excepting where the Hurons and the aggressive Iroquois held the country around the lower lakes, and the Five Nations were already extend-

ing their hunting-grounds at the cost of Algonquin and Lenapé tribes. But however valuable comprehensive groupings may prove to the philologist, the physical characteristics of the tribes are best studied in smaller groups; and by this means we are able to trace the prevalence of dialects of a common language among tribes widely scattered, and frequently marked by important diversities of physical character. For this reason the New England Indians have been grouped apart in Table XII.; while another table (XIII.) is added, chiefly derived from observations recorded by Dr. Morton, and including examples of tribes embraced by the comprehensive classification of Algonquin-Lenapés, but omitting those of Canada and New England, which have already been given in previous tables. Such a grouping of allied tribes is not without its value, as a means for comparing general results; though the essentially distinctive features of a single tribe or nation are more to be relied on. I have accordingly added the mean results of the Menominee crania, nine in number, in addition to those of the whole. The Menominees originally occupied the country round Green Bay, on Lake Michigan, where they early attracted the attention of the Jesuit missionaries. The unusual fairness of their complexion has been repeatedly commented on by travellers, and presents so remarkable a contrast to the colour of other Indian tribes in their vicinity, that Keating, after noting in his *Expedition to the St. Peter's River*, the resemblance of the Menominee Indians he met with to the white mulattoes of the United States, adds: "They are naturally so much fairer than the neighbouring tribes, that they are sometimes called the White Indians." How far this is a purely aboriginal trait, may be subject to doubt. Great variety unquestionably exists in the shades of colour of the American Indian tribes; but besides this, the presence of the white man among them began very early to affect the race, and changes have been wrought by such intercourse on tribes, entirely beyond the most remote clearings of western settlement. But this subject is treated of more in detail in a subsequent chapter. No traces of physical degeneracy, however, are noted by the latest observers of the Menominees. Though reduced to a small remnant, they still maintain their ancient character for bravery and foresight; and appear to have possessed characteristics peculiarly fitting them for acquiring the elements of civilisation, had they been originally subjected to its influences under favourable circumstances. "Their language," Gallatin remarks, "though of the Algonquin stock, is less

similar to that of the Chippewas, their immediate neighbours, than almost any dialect of the same stock." Excepting in the remarkable excess of the parietal diameter, the Menominee mean falls below the total mean; but this may be partly accounted for by the proportion of small female skulls to the whole.

Thus far the various ethnical groups referred to are all embraced within the true American stock to which Dr. Morton and others, including the most distinguished ethnologists of the New World, agree in assigning a nearly absolute uniformity of cranial type, or such an approximation to it as serves in their estimation to indicate with equal clearness the unity of the American race, and its separation by radical diversity of ethnical characteristics, from all the races of the Old World. On the one hand, Dr. Nott affirms of it: "Identical characters pervade all the American race, ancient and modern, over the whole continent;" while he no less confidently asserts that the American continent, at the time of its discovery, "was populated by millions of people resembling each other, possessing peculiar moral and physical characteristics, and in utter contrast with any people of the Old World."[1] Similar opinions have been reiterated in a variety of forms by American ethnologists; but all concur in excepting from this otherwise undeviating comprehensiveness of ethnical uniformity, the tribes occupying the hyperborean regions. Dr. Morton has appended to his *Crania Americana* drawings and measurements of four Esquimaux skulls, in order to illustrate "the great and uniform differences between these heads and those of the American Indians," and to confirm the opinion advanced by him, "that the Esquimaux are the only people possessing Asiatic characteristics on the American continent." The evidence resulting from varied opportunities of observation, and the opinions arrived at by the most experienced practical ethnologists, appear to me to point to a very different conclusion. The Mongolian classification of the American Indian is borne out by many significant points of resemblance in form, colour, texture of hair, and peculiar customs and traits of character, wanting in the Esquimaux. The striking resemblance noted by Humboldt, as existing between the American race and the Asiatic Mongols, has already been referred to; and the same idea receives independent confirmation on the high authority of Dr. Charles Pickering, as the result of his extensive observations on the races of both continents; while the philological unity of

[1] *Types of Mankind*, pp. 291, 296.

the American continent is acknowledged to embrace its hyperborean race, even by those who most rigidly enforce its exclusion on physical grounds. In some respects the cranial and other physical peculiarities of the Esquimaux, undoubtedly distinguish them from other American races; but to those an exaggerated value has been assigned, in part, perhaps, owing to the great diversity of habits and manners incident to Arctic life.

The extreme pyramidal character of the Esquimaux cranium consequent on the angular junction of the parietal bones, and the prolongation of this wedge-like form into the frontal bone, is marked with a greater prominence than in any other American race; and still more, the prognathous form of the superior maxilla, and the very small development of the nasal bones, contrast with well-known characteristics of the Red Indian. But notwithstanding those distinctive points, an impartial observer might be quite as likely to classify some of the examples of Iroquois and other northern tribes figured in the *Crania Americana*, with the Esquimaux, as to trace in them any approximation to a Peruvian, Mexican, or Mound-Builder type. Compare, for example, the vertical and occipital diagrams, furnished by Dr. Morton, of the Esquimaux crania, with those he has selected in illustration of the Iroquois and Hurons. Both are elongated, pyramidal, and with a tendency towards a conoid rather than a flattened or vertical occipital form; and when placed alongside of the most markedly typical Mexican or Peruvian heads, the one differs little less widely from these than the other. Some of the most marked elements of contrast between the Hurons and Esquimaux are traceable in the bones of the face: physiognomical, but not cerebral.

In all arguments based on the assumed predominance of one uniform cranial type throughout the whole Western Hemisphere, the Arctic American, or Esquimaux, has been excluded; and he has been regarded either as the exceptional example of an Asiatic intruder on the American continent, or as the hyperborean autochthone of the Arctic realm, as essentially indigenous there as the reindeer or the polar bear. An examination of numerous Arctic crania, and a comparison of them with those of the North American Indians in the Morton and other collections, have only tended to confirm my doubts as to the existence of any such uniform or strongly marked line of difference as Dr. Morton was led to assume from the small number of examples of the former which came under his observation.

TABLE XIV.—ESQUIMAUX CRANIA.

	LOCALITY.	L. D.	P. D.	F. D.	V. D.	I. M. A.[1]	I. A.	I. L.	O. F. A.	H. C.
1.	Baffin's Bay, . .	7·2	5·1	4·2	5·3	...	13·8	4·3	14·3	20·2
2.	Disco Island, . .	7·4	5·1	4·3	5·7	...	15·1	3·7	15·7	20·5
3.	"In the Snow," Captain Parry, . .	7·2	5·4	4·4	5·3	...	14·4	4·3	14·5	20·6
4.	Sabine Island, . .	7·5	5·2	4·3	5·6	...	14·7	4·2	15·5	21·1
5.	Hopedale, Labrador,	8·0	5·4	4·6	5·7	...	15·2	4·3	16·1	22·2
6.	Icy Cape, Behring St.,	6·7	5·1	4·4	5·1	...	14·4	3·8	13·1	19·1
7.	Cast, . . .	7·2	4·8	4·3	5·3	...	14·0	4·0	15·3	20·2
8.	Lat. 69° 21′ 19″ N., Long. 81° 31′ W.,	7·6	5·7	4·6	5·6	...	15·3	4·3	15·6	21·8
9.	Cast, . . .	7·1	4·8	4·0	5·2	...	13·7	4·2	15·2	19·5
10.	,, . . .	7·4	5·3	4·5	5·5	...	15·2	4·2	16·1	20·7
11.	,, . . .	7·4	5·2	4·3	5·5	...	14·6	4·1	15·4	20·7
12.	,, . . .	7·3	5·3	4·3	5·5	...	14·6	4·2	14·9	20·7
13.	Hare Island, . .	6·9	4·9	4·0	5·3	...	13·3	4·0	14·0	19·4
14.	By M. Schwartz, Stockholm	7·7	5·6	4·6	5·7	...	15·1	4·3	15·4	21·7
15.	,, ,,	7·4	5·1	4·2	5·2	...	14·3	4·1	14·6	20·5
16.	,, ,,	7·4	5·4	4·5	5·4	...	14·6	4·2	15·1	21·3
17.	,, ,,	7·4	5·1	4·5	5·4	...	14·3	4·1	14·6	20·7
18.	,, ,,	7·2	5·0	4·2	5·5	...	14·4	4·0	15·5	20·0
19.	,, ,,	7·2	5·2	4·4	5·5	...	14·6	4·0	14·7	20·4
20.	Davis Straits, . .	7·5	5·4	4·6	5·4	...	14·3	4·1	15·2	20·4
21.	,, . .	7·3	5·4	4·4	5·3	...	14·2	4·2	14·6	20·3
22.	Greenland (167), .	7·1	5·5	...	5·6	...	...	...	14·8	20·0
23.	Disco Island, (168), .	7·0	4·9	...	5·6	...	...	...	14·9	19·8
24.	Eskimo (166), .	7·1	5·5	...	5·6	...	...	...	14·8	20·6
25.	Disco Island, . .	7·8	4·6	4·3	5·8	12·7	...	4·2	15·8	21·4
26.	,, . .	6·9	4·8	4·2	5·2	12·0	...	4·3	14·3	19·4
27.	,, . .	7·2	4·6	4·0	5·6	12·8	...	4·3	14·6	...
28.	,, . .	7·5	4·8	4·4	5.5	13·0	...	4·1	14·9	21·0
29.	,, . .	7·5	4·4	4·4	5·7	12·7	...	4·5	14·9	20·8
30.	,, . .	6·9	4·1	3·8	5·3	11·8	...	4·3	13·6	19·4
31.	,, . .	7·4	4·9	4·3	5.7	12·3	...	4·2	14·8	20·5
32.	Greenland, Dr. Kane,	7·6	4·6	4·4	5·7	12·7	...	4·5	15·2	21·4
33.	,, ,,	7·2	4·5	4·3	5·5	12·3	...	4·3	14·3	20·3
34.	,, ,,	7·1	4·8	3·7	5·3	11·8	...	4·4	14·3	19·4
35.	,, ,,	7·1	4·8	4·2	5·1	12·0	...	4·0	14·0	19·8
36.	,, ,,	7·1	4·7	4·0	5·3	12·3	...	4·3	14·2	19·6
37.	Upernavick, . .	7·0	5·3	4·9	5·5	12·9	...	4·3	14·6	20·4
38.	,, . .	7·3	5·0	4·3	5·3	12·4	...	4·1	14·8	20·0
39.	N. Greenland, . .	7·3	5·3	4·2	5·4	12·9	14·6	4·0	14·2	20·2
	Mean, . .	7·28	5·04	4·31	5·45	12·44	14·48	4·18	14·80	20·41

[1] An additional column, I. M. A., the *intermeatoid arch*, is added in this Table, measured from the meati, instead of the mastoid processes, owing to the defective condition of the latter in some of the crania. The measurements of 25–38 were taken for the author by Dr. J. Aitken Meigs, and in these the parietal diameter is at the parietal protuberances; in the others, it indicates the extreme parietal diameter, generally nearer the squamous suture. This reduces the apparent mean parietal diameter, which if taken from the first twenty-four crania rises to 5·22.

My opportunities for the study of Esquimaux crania have sufficed to furnish me with some very satisfactory data for forming an opinion on the typical elements of the Arctic skull-form. In Table XIV. the measurements of thirty-nine well-authenticated Arctic crania afford some adequate means for instituting comparisons with those of the Indian. But in the interval which has elapsed since the publication of the first edition, I have enjoyed the advantage of examining at Philadelphia, in company with Dr. J. Aitken Meigs, a remarkable series of one hundred and twenty-five Esquimaux crania, obtained by Dr. Hayes during his Arctic explorations in 1860; and on a recent visit to Washington have also compared and carefully measured the Tschuktchi crania in the collection of the Smithsonian Institution. The latter skulls, six in number (Table XV.), were exhumed from the burial-place of a village called Tergnyune, on the island of Arikamcheche, at Glassnappe harbour, west of Behrings Straits, lat. 64° 40′ N., long. 172° 59′ W. of Greenwich, and furnish interesting materials for comparison between the American and Asiatic representatives of the common Arctic race. Without being identical, the correspondence in form between the two groups of crania is such as other affinities in language, arts, and general physical character would suggest. The Tschuktchi skulls here referred to, are, however, too few in number for the determination of a minute typical form; and the fact that they are all derived from one cemetery adds to the chances of exceptional family peculiarities. But on carefully examining the Hayes collection, with the Tschuktchi skull-form in view, I was not only struck with the predominance of the same features in both, though less strongly marked in the latter; but also with the fact that from the large number of Esquimaux crania before me, it was quite possible to select an equal number closely corresponding to the Asiatic hyperborean type. In both, the head is long, high, and pyramidal, with retreating forehead, and great malar breadth; and in all of them there is some tendency toward the wedge-formed vertex: which, in the most strongly-marked Esquimaux crania presents the junction of the parietal bones in a keel-like ridge, extending into the depressed and narrow frontal bone. The most striking and probably typical Tschuktchi head, is that marked No. 3, in Table XV.; whilst No. 4, as will be seen, approaches the brachycephalic proportions of the true Mongol type. Dr. Meigs describes the Esquimaux skull as "large, long, narrow, pyramidal; greatest breadth near the base; sagittal suture

prominent and keel-like, in consequence of the angular junction of the parietal and two halves of the frontal bones; proportion between length of head and height of face as seven to five; . . . forehead flat and receding; occiput full and salient; face broad and lozenge-shaped, the greatest breadth being just below the orbits; malar bones broad, high, and prominent; zygomatic arches massive and widely separated; nasal bones flat, narrow, and united at an obtuse angle, sometimes lying in the same plane as the naso-maxillary processes."[1] The remarks of Dr. J. Barnard Davis on the last-named peculiarities, are worthy of note. In the Esquimaux of the eastern shores of Baffin's Bay, he observes, the nasal bones are scarcely broader, though frequently longer than in some Chinese skulls, where they are so narrow as to be reduced to short linear bones. "In those of the opposite, or American shores of Baffin's Bay, they are very different, presenting a length, breadth, and angle of position, almost equal to those of European races, having aquiline noses."[2] This slight yet striking anatomical difference seems to supply a link of considerable value, as indicative of a trait of physiognomical character in the more southern Esquimaux, tending, if confirmed by further observation, like other physical characteristics already noticed, to modify the abrupt transition assumed heretofore as clearly defining the line of separation between the contrasting Arctic and Red Indian races of the New World.

TABLE XV.—TSCHUKTCHI CRANIA.

		L. D.	P. D.	F. D.	V. D.	I. M A.	F. A.	I. L.	O. F. A	H. C.
1.	Arikamcheche, . M.	7·2	5·4	3·8	5·5	12·5	14·6	3·9	14·6	19·9
2.	,, . M.	7·25	5·6	4·6	5·4	12·5	14·6	4·2	14·3	20·4
3.	,, . M.	7·0	5·4	4·0	5·5	13·0	15·8	4·2	14·4	19·7
4.	,, . M.	6·7	5·5	4·2	5·8	12·7	14·4	4·1	13·7	19·3
5.	,, . F.	6·7	5·0	3·7	5·2	12·1	13·9	3·8	13·8	19·0
6.	,, . F.	6·8	5·2	3·8	5.1	13·2	14·2	3·9	14·3	19·1
	Mean, .	6·93	5·35	4 02	5·42	12·67	14·58	4·C2	14·18	19·57

From the relative measurements of the Esquimaux and Tschuktchi crania, the great length and narrowness of the skull are apparent, though in estimating the value of the parietal diameter in instituting comparisons with the other tables, it must be

[1] *Catalogue of Human Crania*, A.N.S., 1857, p. 50.
[2] *Crania Britannica*, p. 30.

borne in remembrance that this diameter in fourteen of the Esquimaux examples (21-34) is measured from the parietal protuberances, which are not necessarily the points of greatest width. In the Esquimaux, as in the Huron, and generally in the Indian skull, the greatest diameter appears to be towards the squamous suture. The elevation of the vertex is also in no degree remarkably divergent from the proportions of northern Indian crania, and, with the other points of correspondence or approximation, tends to confirm the idea that the supposed uniformity traceable throughout the continent, is no more than might fairly be looked for among nations placed to so great an extent under the operation of similar conditions of social life, and affected by so many corresponding extraneous influences.

Dr. Latham, after commenting on the distinctions which separate the Esquimaux of the Atlantic from the tribes of American aborigines lying to the south and west of them, as elements of contrast which have not failed to receive full justice, adds: "It is not so with the Eskimos of Russian America, and the parts that look upon the Pacific. These are so far from being separated by any broad and trenchant line of demarcation from the proper Indians or the so-called Red Race, that they pass gradually into it; and that in respect to their habits, manner, and appearance, equally. So far is this the case that he would be a bold man who should venture, in speaking of the southern tribes of Russian America, to say: *Here the Eskimo area ends, and here a different area begins.*"[1] The difference thus pointed out may be accounted for, to a considerable extent, by the diverse geographical conformation of the continent, on its eastern and western sides, which admits in the latter of such frequent and intimate intercourse as is not unlikely to lead to an intermixture of blood, and consequent blending of the races, however primarily distinct and diverse. But the evidence now produced refers to tribes having no such intercourse with the Esquimaux, and distinguished from them by important characteristics, in manners, social habits, and external physiognomy. Nevertheless, if the conclusions submitted here, deduced from an examination of several hundred Indian crania, are borne out by the premises, this much at least may be affirmed: that a marked difference distinguishes the Northern tribes, now or formerly occupying the country around the great lakes, and ranging through the ancient hunting-grounds between the Mississippi and the Atlantic seaboard,

[1] *Varieties of Man*, p. 291.

from some of those to the westward of the Rocky Mountains, as well as in the southern valley of the Mississippi; while, notwithstanding the prognathous maxillary development of the Esquimaux: intermediate forms supply nearly all the links of a graduated approximation, from the extreme brachycephalic skull with vertical occiput, to that of the dolichocephalic Esquimaux, with protuberant occiput, inclining in its upper part obliquely towards the vertex. This is best illustrated, in so far as cranial measurements are available for the purpose of comparison, by the following Table (XVI.), where the eye will catch at a glance the distinctive elements of approximation or contrast which pertain to the different groups:

TABLE XVI.—COMPARATIVE MEAN CRANIAL MEASUREMENTS.

		L. D.	P. D.	F. D.	V. D.	I. A.	I. L.	O. F. A.	H. C.
1.	Mound Crania, . .	6·57	5·90	4·20	5·55	15·60	4·40	14·00	19·83
2.	Cave Crania, . .	6·62	5·78	4·51	5·47	14·85	4·42	13·87	19·77
3.	Peruvian B. C., . .	6·32	5·62	4·06	5·18	14·96	4·12	13·27	19·10
4.	Peruvian D. C., . .	6·49	4·95	3·57	4·94	14·45	4·10	14·46	19·72
5.	Mexican B. C., . .	6·56	5·51	4·30	5·55	14·69	4·25	13·95	19·66
6.	Mexican D. C., . .	7·05	5·41	4·31	5·35	15·20	4·12	14·17	19·99
7.	American B. C., . .	6·62	5·45	4·24	5·30	14·63	4·25	13·85	19·44
8.	American D. C., . .	7·24	5·47	4·36	5·42	14·67	4·23	14·62	20·29
9.	New England, . .	7·05	5·36	4·15	5·39	14·32	4·10	14·31	19·77
10.	Iroquois, . . .	7·37	5·45	4·33	5·44	14·62	4·24	14·62	20·48
11.	Algonquin, . . .	7·25	5·58	4·43	5·37	14·42	4·35	14·42	20·44
12.	Algonquin-Lenapé, .	7.12	5·53	4·37	5·42	14·77	4·22	14·42	20·30
13.	Tschuktchi, . .	6·93	5·35	4·02	5·42	12·67	4·02	14·18	19·57
14.	Esquimaux, . .	7·28	5·22	4·31	5·45	12.44	4·18	14·80	20·41

No. 1 is the mean of the four undoubted Mound Crania, and No. 10 that of the combined Tables IX., X., both of which pertain to the common Iroquois stock. In No. 14 the parietal diameter is the mean of the extreme parietal, as indicated in the note, Table XIV.

The Peruvian crania of both classes indicate a people of inferior size and stature, and present essential differences, even in the brachycephalic class, from those of the mounds. Their small vertical diameter is specially noticeable. In this, as well as in other respects, the greater correspondence between the Mexican brachycephali and the Mound crania is suggestive, and calculated to increase our desire for the acquisition of a sufficient number of examples of both, whereby to test the evidence of physical correspondence between the elder races of Anahuac and the people who have left such remarkable evidences of a partially developed civilisation in the Mississippi Valley. The two extremes, it will be seen, are the Peruvian brachycephali and the Esquimaux:—

	Length.	Breadth.	Height.	O. F. Arch.
Peruvian, . . .	6·32	5·62	5·18	13·27
Esquimaux, . .	7·28	5·22	5·45	14·80

But between these, the range of variations sufficiently illustrates the fallacy of the supposed uniform cranial type affirmed to prevail throughout the whole Western Hemisphere, from the Arctic Circle to Cape Horn.

If the data thus selected as examples of the different groups furnish any approximation to their relative cranial measurements, it seems scarcely possible to evade the conclusion that the ideal American typical head has no existence in nature; and that if a line of separation between the Peruvian, or so-called Toltecan head, and other American forms is to be drawn, it cannot be introduced as heretofore to cut off the Esquimaux, and rank the remainder under varieties of one type; but must rather group the hyperborean American cranium in the same class with others derived from widely separated regions, extending into the Tropics and beyond the Equator. In reality, however, the results of such attempts at a comparative analysis of the cranial characteristics of the American races go far beyond this. They show that the form of the human skull is just as little constant among different tribes or races of the New World as of the Old; and that, so far from any simple subdivision into two or three groups sufficing for American craniology, there are abundant traces of a tendency of development into the extremes of brachycephalic and dolicho cephalic or kumbocephalic forms, and again of the intermediate gradations by which the one passes into the other.

The measurements of three hundred and twenty crania are given in the previous tables. A much larger number would be required to illustrate all the intermediate forms, but sufficient data have been furnished to point in no unmistakable manner to the conclusions indicated above. If crania measuring upwards of two inches in excess in the longitudinal over the parietal and vertical diameters—without further reference to other variations,—may be affirmed, without challenge, to be of the same type as others where the longitudinal, parietal, and vertical diameters vary only by minute fractional differences: then the distinction between the brachycephalic and the dolichocephalic type of head is, for all purposes of science, at an end; and the labours of Blumenbach, Retzius, and all who have trod in their footsteps, have been wasted in pursuit of an idle fancy. If differences of cranial conformation of so

strongly defined a character, as are thus shown to exist between various ancient and modern people of America, amount to no more than variations within the normal range of a common type, then all the important distinctions between the crania of ancient European barrows and those of living races amount to little; and the more delicate details, such as those, for example, which have been supposed to distinguish the Celtic from the Germanic cranium; the ancient Roman from the Etruscan or Greek; the Slave from the Magyar or Turk; or the Gothic Spaniard from the Basque or Morisco, must be utterly valueless. But the legitimate deduction from such a recognition, alike of extreme diversities of cranial form, and of many intermediate gradations, characterizing the nations of the New World, as well as of the Old, is, not that cranial formation has no ethnic value; but that the truths embodied in such physiological data are as little to be eliminated by ignoring or slighting all diversities from the predominant form, and assigning it as the sole normal type, as by neglecting the many intermediate gradations, and dwelling exclusively on examples of extreme divergence from any prevailing type.

Humboldt has been quoted as favouring the idea of American ethnic unity; but those who dwell most upon it, omit to notice that it is a unity which he believed them to hold in common with the Mongol nations of Asia. It must be borne in remembrance, moreover, that his own observations were limited to tropical America. It is therefore no presumption to assume that personal observation in reference to the northern tribes would have modified his opinion, that "the nations of America, except those which border on the polar circle, form a single race, characterized by the formation of the skull, the colour of the skin, the extreme thinness of the beard, and straight glossy hair." The formation of the skull has been abundantly discussed here. As to the colour of the skin, extended observation tends in like manner to disclose considerable variations: from the fair Menominees, and olive-complexioned Chippewas, to the dark Pawnees, and the Kaws of Kansas almost as black as negroes. The name of *Red* Indian I conceived had been applied to the cinnamon-coloured natives of the New World, in consequence of their free application of red pigments, such as are in constant use among the Indians on Lake Superior: until I fell in with an encampment of Micmacs, in their birch-bark wigwams, on the Lower St. Lawrence, and saw for the first time a complexion to which the name of red or reddish-brown may very fitly

apply. Again, as to the hair, the evidence of the ancient Peruvian graves furnishes proof of hair differing essentially both in colour and texture from that of the modern Indian; and Mexican terra-cottas and sculptures of Central America indicate that the beard was by no means universally absent.

But it is not necessary thus to discuss in detail a detached remark of Humboldt, in order to prevent its misapplication in proof of the deductions it has been produced to support; for he has himself furnished the most conclusive evidence of the totally different inferences he drew from those recognised characteristics of the American race. Dr. Nott, when commenting on the Esquimaux skulls engraved in the *Crania Americana*, remarks: "Nothing can be more obvious than the contrast between these Esquimaux heads and those of all other tribes of this continent. They are the only people in America who present the characteristics of an Asiatic race; and being bounded closely on the south by genuine aborigines, they seem placed here as if to give a practical illustration of the irrefragable distinctness of races."[1] But such ethnical contrasts are by no means so rare. Mr. Hale, after enjoying all the advantages for extended observation and comparison which his position as philologist of the United States exploring expedition furnished, remarks on the contrast between the native population on the upper and lower waters of the Columbia River: "No two nations of Europe differ more widely in looks and character than do these neighbouring subdivisions of the American race."[2] Dr. Pickering, as we have seen, after the same experience, while giving abundant proof that no prejudice against the theory of an "irrefragable distinction of races" influenced his opinions, nevertheless arrived at conclusions so diametrically opposed to those of Dr. Nott, that he affirms the Asiatic and American nations of the Mongolian type to be one race. Humboldt, who enjoyed preëminent opportunities of studying the Mongolian characteristics on the Asiatic continent, in full confirmation of the same idea, remarks, in his introduction to his *American Researches*: "The American race bears a very striking resemblance to that of the Mongol nations, which include the descendants of the Hiong-Nie, known heretofore by the name of Huns, the Kalkas, the Kalmuks, and the Burats. It has been ascertained by late observations, that not only the inhabitants of Unalashka, but several tribes of South America, indicate by the

[1] *Comparative Anatomy of Races, Types of Mankind*, p. 447.
[2] *Ethnography and Ethnology of U. S. Exploring Expedition*, p. 199.

osteological characters of the head, a passage from the American to the Mongol race. When we shall have more completely studied the brown men of Africa, and that swarm of nations who inhabit the interior and north-east of Asia, and who are vaguely described by systematic travellers under the name of Tartars and Tschoudes: the Caucasian, Mongol, American, Malay, and Negro races, will appear less insulated; and we shall acknowledge in this great family of the human race one single organic type, modified by circumstances which perhaps will ever remain unknown." It is indeed an important and highly suggestive fact, in the present stage of ethnological research, that authorities the most diverse in their general views and favourite theories as to the unity or multiplicity of human species, can nevertheless be quoted in confirmation of opinions which trace to one ethnic centre, the Fin and Esquimaux, the Chinese, the European Turk and Magyar, and the American Indian.

CHAPTER XXI.

ARTIFICIAL CRANIAL DISTORTION.

PREVALENT MODE OF SEPULTURE—WIDELY-DIFFUSED SEPULCHRAL RITES—INDIAN OSSUARIES—SCAFFOLDING THE DEAD—THE ANCIENT MACROCEPHALI—CRANIAL DEFORMATION—MACROCEPHALI OF THE CRIMEA—COMPRESSED PERUVIAN CRANIA—HUN AND AVAR SKULLS—THE HUNS OF ATTILA—CAVE SKULL FROM JERUSALEM—ASIATIC SKULL-FLATTENING—FRENCH SKULL-COMPRESSION—THE HOCHELAGA SKULL—POSTHUMOUS MALFORMATION—COMMON ABNORMAL FORMS—UNDESIGNED MODIFICATIONS—EFFECTS OF THE CRADLE-BOARD—KANAKA FLATHEADS—MONGOL CUSTOM—INFLUENCE OF SYNOSTOSIS—OSSIFICATION OF SUTURES—THE FLATHEAD TRIBES—PROCESS OF DEFORMATION—INTELLECTUAL INFLUENCES—PERUVIAN CUSTOM.

THE assumed evidences of a physical unity pervading the nations of the American continent disappear upon careful scrutiny, and the like results follow when the same critical investigation is applied to other proofs adduced in support of this attractive but insubstantial theory. Dr. Morton, after completing his elaborate illustrations of American craniology, introduces an engraving of a mummy of a Muysca Indian of New Granada, and adds: "As an additional evidence of the unity of race and species in the American nations, I shall now adduce the singular fact, that from Patagonia to Canada, and from ocean to ocean, and equally in the civilized and uncivilized tribes, a peculiar mode of placing the body in sepulture has been practised from immemorial time. This peculiarity consists in the sitting posture."[1] He accordingly proceeds to marshal evidence in proof of the practice of such a mode of interment among many separate and independent tribes; nor is it difficult to do so, for it was a usage of greatly more extended recognition than his theory of "unity of race and species" implies. It was a prevailing, though by no means universal mode of sepulture among tribes of the New World; and its practice by many ancient nations is indicated by the allusions of Herodotus, and proved by sepulchral disclosures pertaining to still older eras. The British cromlechs show that the

[1] *Crania Americana*, p. 244.

custom was followed by their builders in primitive times. The ancient barrows of Scandinavia reveal the like fact, and abundant evidence proves the existence of such sepulchral rites, in ancient or modern times, in every quarter of the globe; so that if the prevalence of a peculiar mode of interment of the dead may be adduced as evidence of unity of race and species, it can only operate by reuniting the lost links which restore to the red man a common share in the genealogy of the sons of Adam.

But ancient and modern discoveries alike prove considerable diversity in the sepulchral rites of all nations. The skeleton has been found in a sitting posture in British cromlechs, barrows, and

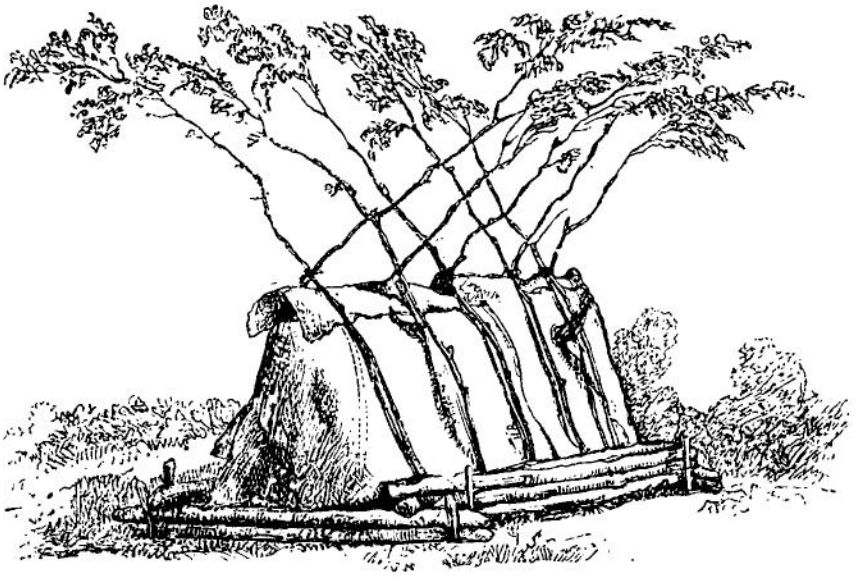


FIG. 65.—Chippewa Grave, Saskatchewan River.

graves, of dates to all appearance long prior to the era of Roman invasion, and of others subsequent to that of Saxon immigration. But we have also evidence of cremation and urn-burial; of the recumbent skeleton under the cairn and barrow, in the stone cist, and in the rude sarcophagus hewn out of the solid trunk of the oak; and in this, as in so many other respects, the British microcosm is but an epitome of the great world. Norway, Denmark, Germany, and France all supply the same evidences of varying rites; and ancient and modern customs of Asia and Africa confirm the universality of the same. In the Tonga and other islands of the Pacific, as well as in the newer world of Australia, the custom of burying the dead in a sitting posture has been repeatedly noted.

But it is not universal even there; nor was it so in America, though affirmed by Dr. Morton to be traceable throughout the northern and southern continents, and by its universality, to afford "collateral evidence of the affiliation of all the American nations." So far is this from being the case, that nearly every ancient and modern sepulchral rite has had its counterpart in the New World. Mummification, cremation, urn-burial, and inhumation, were all in use among different tribes and nations of South America, and have left their traces no less unmistakably on the northern continent. Figure 65 illustrates a common form of bier, sketched from a Chippewa grave on the Saskatchewan. The body is deposited on the surface, protected by wood or stones, and covered over with birch-bark. In the neighbourhood of the clearings, as at Red River, the grave is generally surrounded by a high fence. Among the Algonquins, the Hurons, the Mandans, the Sioux, and other tribes, the body was laid out at full length on an elevated bier or scaffold, and left to decay; then after a time the bones of the dead, with all the offerings deposited beside them, were consigned to one common grave.

Ossuaries of great extent, forming the general receptacle of large communities, have been repeatedly brought to light both in Canada and the Northern States. Creuxius quotes from Le Jeune an account of one of the general burials of the Hurons which he witnessed. A grand celebration was solemnly convoked. Not only the remains of those whose bodies had been scaffolded, but of all who had died on a journey or on the war-path, and been temporarily buried, were now gathered together and interred in one common sepulchre with special marks of regard. The pit was lined with furs; all the relics and offerings to the dead were deposited beside the bones; and the whole were covered with furs before the earth was thrown over them. When the Mandans buried the remains of their scaffolded dead, they left the skull uninterred; and Catlin describes their skulls as lying on the prairies arranged in circles of a hundred or more, with their faces towards the centre, where a little mound is erected, surmounted by a male and female buffalo skull.

When we pass to the westward of the Rocky Mountains, new modifications vary the Indian sepulchral rites. Along the Cowlitz and Columbia rivers, and among various north-west tribes on the Pacific, the canoe of the deceased is converted into his bier. In this he is laid at full length, adorned in his gayest attire, and surrounded with his weapons and favourite property, as well as with

the offerings of his friends; and after being towed in solemn funeral procession to the burial-place of the tribe, the canoe is elevated on poles, and protected by a covering of birch bark. Among the Chimpseyan or Babeen Indians the female dead are scaffolded, but the male are invariably burned; and numerous evidences of the practice of cremation and urn-burial have been found in other parts of the continent. Again, the Peruvian mummy pits, the Mammoth Cave of Kentucky, and the caves at Golconda, Steubenville, and other localities, filled with bones and dessicated remains of the dead, or with their carefully preserved mummies, illustrate other and varying customs which have their counterpart in the practices of the Old World; while the Ohio and Scioto mounds furnish unmistakable evidence that both cremation and incumbent mound sepulture were practised by the race whose works preserve to us so many traces of ancient arts and long extinct rites.

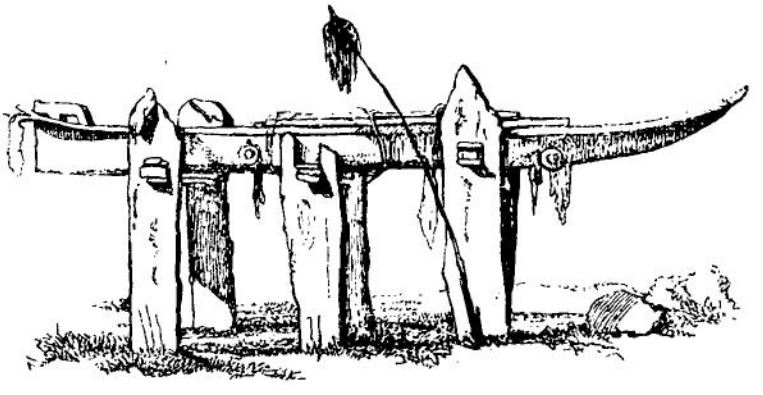


FIG. 66.—Canoe Bier, Columbia River.

It is obvious, from such references, that there is little more proof of the prevalence of any single mode of sepulture among the American aborigines than can be traced in the practices of primitive nations of the Old World; while the custom of interring the dead in a sitting posture, in so far as it prevails among them, is rather suggestive of borrowed Asiatic, or primitive European rites, than of anything peculiar to the western hemisphere. The exposure of the corpse on its scaffolding, or elevated in its canoe-bier (Fig. 66), constitutes a far more characteristic peculiarity of the New World; and if it were the one prevalent rite, it might seem to justify the inference which Dr. Morton has attempted to maintain, by assuming not only the universality of a different practice, but also its restriction to the American continent.

But a remarkable characteristic, common to many American tribes and nations, is much more suggestive of widely diffused affinities throughout the Western Hemisphere, as well as of an aboriginal isolation, than anything else disclosed by prevalent customs or peculiar rites of sepulture. Much attention has naturally been attracted to the evidences which have been brought to light, alike in the cemeteries of ancient Peruvian seats of civilisation, and in those of the hunter tribes of the north, of the practice of moulding the human head into artificial forms. But the strange custom proves to be no exclusive American characteristic, but one which had its counterpart among customs of the ancient world. This, therefore, is also suggestive of a borrowed usage, and of affinities with nations of the eastern hemisphere; unless indeed it be an ancient gift from America to Asia.

References to the singular cranial conformation of certain tribes, and to the strange practice of artificially moulding the human head, were familiar to Europe not only prior to the first voyage of Columbus, but centuries before the Christian era. The earliest notice occurs in the writings of Hippocrates, who, in his treatise *De Aëris, Aquis, et Locis,* gives an account of a people inhabiting the shores of the Euxine, whose cranial conformation bore no resemblance to that of any other nation. He further states, that they considered those most noble who had the longest heads, and ascribes this peculiar form to an artificial elongation by compression during infancy. To this people, accordingly, he gave the name of Macrocephali; and both he and subsequent writers ascribe certain peculiar mental endowments to this long-headed race. Strabo, Pliny, and Pomponius Mela all allude to the subject at later dates, though assigning different localities to the nations or tribes they refer to, and also indicating diversities of form in their peculiar cranial characteristics. This tends still further to suggest that the name of Macrocephali does not properly belong to a distinct race, or single tribe, on the shores of the Euxine Sea; but that, like the term Flatheads, as used at the present day among the Indian tribes of the North-west, it was applied to all who practised the barbarous art of cranial distortion. Strabo, in the eleventh book of his Geography, describes the western portion of Asia, of which alone he appears to have had any accurate ideas; and speaks of an Asiatic tribe as having anxiously striven to give themselves a long-headed appearance, and to have foreheads projecting over their beards. Pomponius Mela also describes the Macrocephali he

refers to as less hideous than other tribes in the same vicinity, among whom it may be inferred that cranial deformation was carried to a greater extent, as among the modern Chinook Indians, who depress the forehead until the skull assumes the form of that of a brute. The skulls of various ancient and modern American tribes can be discriminated by means of the peculiar form of head most in fashion with the tribe; and all the allusions of classical writers confirm the probability, that from the time of Hippocrates till long after the Christian era, the unknown regions eastward of the Euxine Sea were occupied by nations among whom the practice of artificial compression of the skull prevailed to a remarkable extent; though modified in part, probably by the differing cranial proportions natural to certain tribes around Mount Caucasus, and also by the influence of taste and fashion on the strange hereditary custom. Stephanus Byzantinus is quoted by Retzius, as speaking in his *Geographica* of macrocephalic Scythians among the inhabitants of Colchis, the modern Mingrelia, on the east coast of the Euxine Sea. The Macrocephali of Pliny were in the vicinity of Ceresus in Natolia, and those of Pomponius Mela on the Bosporus; but from Strabo we learn of them in diverse localities both in Asia and Europe. His notices, accordingly, greatly extend the area of this singular custom, and point to it as an ancient practice common among the migratory tribes of western Asia. He refers to one people in the region about Mount Caucasus towards the Caspian Sea, and to another in the valley of the Danube at the river Taler, both of whom modified the natural form of the head.

It thus appears that this barbarous practice is neither of modern origin nor peculiar to the New World; and since attention has been drawn to the subject in recent years, various examples of compressed and distorted crania discovered in ancient European cemeteries, amply confirm the notices of the Macrocephali in the pages of classical writers. Captain Jesse, in his *Notes of a Half-Pay Officer*, describes in his travels in Circassia and the Crimea an example of an artificially compressed cranium which he saw in the Museum at Kertch. This was said to have been found in the neighbourhood of the Don; and he remarks in reference to it: "According to the opinions of Hippocrates, Pomponius Mela, Pliny, and others, the Macrocephali appear to have inhabited that part of the shores of the Euxine, between the Phasis and Trapesus, —the modern Trebizonde." The Russian occupation of the Crimea dates only from a late period in the eighteenth century, but since

then an intelligent attention has been paid to the traces of its ancient occupants. Some of the finest works of art recovered on the sites of Hellenic colonization have been transported to St. Petersburg, but others are preserved in the vicinity of the localities where they have been found; and for this purpose a museum was established at the town of Kertch, in which were preserved many historical antiquities of the Crimean Bosporus; and especially sepulchral relics recovered from the tumuli which abound on the site of the ancient Milesian colony.

It chanced, as is now well known, that, in the fortunes of war, the town of Kertch fell into the hands of the Anglo-French invaders; and some few of its ancient treasures were preserved and transmitted to the British Museum. By far the greater portion of the Museum collections, however, were barbarously spoiled by the rude soldiery; and among the rest doubtless perished the little-heeded relic of the Macrocephali of the Crimea, first described by Hippocrates, in the fifth century before our era. Blumenbach has figured in his first Decade, an imperfect compressed skull, received by him from Russia, which he designates as that of an Asiatic Macrocephalus; and in 1843, Rathke communicated to Müller's *Archiv für Anatomie*, the figure of another artificially compressed skull, also very imperfect, but specially marked by the same depression of the frontal bone. This example is described as procured from an ancient burial-place near Kertch in the Crimea; and no doubt other illustrations of the peculiar physical characteristics of the Macrocephali of the Bosporus will reward future explorers, when the attention of those engaged in such researches, or even in ordinary agricultural labours on the site, is specially directed to the interest now attaching to them.

More recent discoveries of artificially compressed crania have chiefly occurred on European sites, though generally under circumstances which tend to justify their reference to Asiatic tribes. One of the first examples which attracted the attention of scientific observers, subsequent to the publication of Blumenbach's somewhat imperfect engraving, was a skull found, in the year 1820, at Fuersbrunn, near Grafenegg, in Austria. Count August von Breuner, the proprietor of the land, acquired possession of the interesting relic, and at once assigned it to the Avarian Huns, who occupied that region from the middle of the sixth until the eighth century. Of this compressed Avar skull, Professor Retzius gave a description in the proceedings of the Royal Academy of Sciences of Stockholm,

in 1844, which has since been transferred to various scientific journals. In this he shows that the skull, which had been regarded as remarkable for its great elongation, is in reality a true brachycephalic skull, such as the Mongol affinities of the Avars would suggest, but that by artificial compression it had been elongated vertically, or rather obliquely. At this stage, however, attention was diverted from the true elements of interest pertaining to the inquiry, by Dr. Tschudi communicating to Müller's *Archiv für Anatomie* a memoir, in which he instituted a careful comparison between the Grafenegg skull and the compressed crania of ancient Peruvian cemeteries, from whence he deduced the conclusion that the scientific men of Europe had been deceived in ascribing to an Avar or other Asiatic or European source, a skull which must have been originally derived from Peru. In confirmation of this, the Peruvian traveller reminds them that, widely as Austria and Peru are severed, in the seventeenth century the Emperor Charles v. embraced both within his dominions. He accordingly conceives it no improbable conjecture that the compressed skull was brought at that period, as an object of curiosity, from America; and being afterwards thrown aside, it was mistakenly assumed to pertain to native sepulture, when recovered at Grafenegg in 1820.

The testimony thus undesignedly rendered to the remarkable correspondence between the artificially deformed crania of the Old and the New World, is full of interest for us, now that further discoveries have placed beyond doubt the native origin of the Grafenegg cranium. It is preserved in the Imperial Anatomical Museum at Vienna, along with another of precisely the same character subsequently dug up at Atzgerrsdorf, in the immediate vicinity of Vienna. Others have been found at the village of St. Romain, in Savoy, and in the valley of the Doubs, near Mandeuse; and Dr. Fitzinger asserts that a close resemblance is traceable between these and the Crimean macrocephalic crania described by Rathke and Meyer. They are further illustrated by evidence of a curious and independent character.

Dr. Fitzinger, who has published his views on this subject, in the Transactions of the Imperial Academy of Vienna, places beyond doubt the authenticity of the discoveries of macrocephalic skulls in Austria, in genuine sepulchral deposits, one of which was dug up in presence of Dr. Müller, the resident physician of Atzgerrsdorf. He has investigated the whole subject with minute research and accurate scholarship; and after tracing ancient Ma-

crocephali, by means of the allusions of classic writers, to the Scythian region in the vicinity of the Mœtian moor, to the Caucasus, and the further regions extending towards the Caspian Sea, and to their various sites around the Euxine, and on the Bosporus, he mentions an interesting independent illustration of the subject. An ancient medal struck, apparently to commemorate the destruction of the town of Aquileia, by Attila the Hun, in 452, came under his notice. On one side is represented the ruined city, and on the other the bust of the Hunnish leader in profile, with the same form of head as that shown in the supposed Avar skulls. Professor Retzius subsequently confirmed this opinion from an examination of the same medal in gold, in the Royal Cabinet at Stockholm.

Attention having now been called to the subject, confirmatory illustrations multiply. M. F. Troyon, of Bel-Air, near Lausanne, who has carried on an elaborate series of explorations in the ancient cemeteries of that locality, recovered what we may style a Hun or Avar skull, precisely corresponding to those found in Austria, from a tomb of considerable depth; and notes the discovery of several others at the village of St. Romain, in Savoy, so fragile that they fell in pieces soon after their exposure to the air. One of the same class, however, recovered in an imperfect condition, has been preserved sufficiently to exhibit the calvarium in profile, with the singular vertical elongation which appears to have constituted the ideal type of masculine beauty among the Asiatic followers of Attila, as among the Natchez, the Peruvians, and other nations of the New World. It was found by M. Hippolyte Gosse, at Villy, near Reignier, in Savoy, and has been engraved by Professor Retzius, from a drawing furnished to him by the discoverer.

The hideous aspect ascribed by ancient chroniclers to the Hunnish invaders no doubt derived its justification, in part at least, from the strange distortions which custom thus assigned with the same imperative obligation of fashion which still perpetuates the deformity of the Mongol Chinese, in their barbarous efforts at the attainment of other prescribed proportions of an ideal female grace. Thierry, in his *Attila*, refers to the artificial means used by the Huns for giving Mongolian physiognomy to their children. Attila's followers were a miscellaneous horde, dependent for their success on the influence of his personal character. The true wandering hordes of Scythian nomades, who constituted the

Chunni, were of Ugrian race, and kindred to the Hungarians from Mount Ural; but the Huns partook more of the Kalmuk blood, while the Magyars appear to have intermingled that of the true Turk, against whose European aggressions they ultimately presented so impenetrable a bulwark. Attila, however, was in reality as much a leader of Goths as Huns; though the black Huns from the dreary Siberian steppes constituted the aristocracy of his wild followers, whose Mongolian physiognomy formed the ideal of ethnic beauty. At this the Gothic mother aimed, by bandaging the nose, compressing the cheek-bones, and giving an artificial form to the cranium of her infant. The ravages of this furious horde of nomadic invaders spread terror throughout the enervated and tottering Roman empire; and fear added fresh horrors to the wild visages of the Hunnish devastators. "Briefly and dolefully," says Palgrave, "do the chroniclers of France, Germany, and Italy describe and lament the vast fury of the Hungarian ravages. Tradition and poetry impart life and colour to these meagre narratives. The German boor still points at the haunted cairn as covering the uneasy bed or the troubled grave of the restless Huns, whose swords are heard to clash beneath the soil." The "grinning, boar-tusked, ensanguined, child-devouring ogres," are described by the terrified survivors of their desolating inroads as the most hideous race of monsters the world ever saw; and according to the old monk Jornandes, their horrible bestial deformity gained for them more battles than their arms. After the discomfited Huns retreated under Irnac, the youngest son of Attila, to the Volga, and conquered nearly the whole Tauric Chersonese, they were subdued in their turn by the Avars under Zaber-Chan, in the latter half of the sixth century, and thereafter they are called indiscriminately Avars or Huns by all the European chroniclers of the time of Charlemagne. Thus intermingled, they constituted once more a powerful aggressive nation, who during the seventh and eighth centuries kept Europe in continual dread. Their military capital was in Pannonia; but they extended their ravages wherever the spoils of more civilized nations tempted their cupidity; and doubtless the bones of many a fierce Avar lie mouldering in the soil that once trembled under their savage tread. Their name became a synonym for inhuman monster, under its various forms of German *Hune*, Russian *Obri*, French *Bulgar* or *Bougre*, and English *Ogre*. Such were the people whose macrocephalic, or rather obliquely depressed skulls, are believed to have been recovered in recent

years, in Switzerland, Germany, and on the shores of the Euxine; presenting strange abnormal proportions, so singularly corresponding to those of the New World, that the experienced traveller and physician, Dr. Tschudi, has claimed one of the most characteristic of them as no true European discovery, but a lost relic from some ancient Peruvian tomb. Not to Europe, however, do they really belong, but seemingly to the nomade Mongols and Ugrians of the steppes of Northern Asia, in the vast wilds of which we lose them as they spread away eastward towards the Okhotsk Sea, the Aleutian Islands, and Behring Straits.

A curious and unexpected confirmation of the Asiatic source of the compressed crania of Europe is furnished by a discovery made at Jerusalem in 1856, by Mr. J. Judson Barclay, an American traveller. The circumstances are sufficiently remarkable to merit detail. Mr. Barclay having received information of an extensive cave near the Damascus Gate, entirely unknown to Franks, he resolved to explore it in conjunction with his father and brother. The requisite permission was obtained without difficulty from the Nazir Effendi, and they repaired to the cave, the mouth of which is situated directly below the city wall and the houses on Bezetha. Through a narrow, serpentine passage which traverses it, they gained entrance to the cavern, the roof of which is supported by numerous regular pillars hewn out of the solid limestone rock. Many crosses on the wall indicated that the devout pilgrim or crusader had been there; and a few Hebrew and Arabic inscriptions, too much effaced to be deciphered, proved that the place was not unknown to the Jew and the Saracen. About one hundred feet from the entrance a deep and precipitous pit was discovered containing a human skeleton. The bones were of unusually large proportions, and gave evidence from their decayed state, of having long remained in their strange sepulchre. But the skull, though imperfect, was in good preservation, and this the explorers brought to America, and presented to the Academy of Natural Sciences of Philadelphia, where it attracted the attention of Dr. J. Aitken Meigs, and was made the subject of an elaborate communication, printed in the Academy's Transactions.[1]

Placed in the same cabinet with the American crania collected by Dr. Morton, this skull, recovered from beneath the rocky foun-

[1] "Description of a Deformed Fragmentary Skull found in an ancient quarry-cave at Jerusalem; with an attempt to determine, by its configuration alone, the ethnical type to which it belongs." By J. Aitken Meigs, M.D. 1859.

dations of Jerusalem, presents some of the most striking characteristics of the artificially modified crania of the New World. Seen by Dr. Morton, without any clue to the circumstances of its discovery, it would have been pronounced, in all probability, a Natchez skull; shown to Dr. Tschudi, even in a European collection, it would be assigned unhesitatingly as the spoil of a Peruvian grave; but the widely-extended empire of the grandson of Ferdinand and Isabella fails to account for the discovery of such a skull, with all the remains of the skeleton, in an ancient quarry-cavern of Jerusalem. The most remarkable feature is that the occipital bone rises vertically from the posterior margin of the foramen magnum to meet the parietal bones, which bend abruptly downward between their lateral protuberances. After minutely describing the appearance which the several bones present, Dr. Meigs expresses his conviction that the head has been artificially deformed by pressure applied to the occipital region during early youth; and thus recognises in it an indisputable proof of the practice in ancient Asia of the same custom of distorting the human head which was long regarded as peculiar to America.

The arguments by which he aims at assigning to this skull its true ethnical relations rest on less certain foundations. After marshalling all the probable claimants, and assigning reasons for rejecting each, Dr. Meigs shows that it unites some of the most characteristic elements of the Mongolian and the Slavonian head, while differing in some respects from both; and he finally concludes that it may be referred—not as a positive and indisputable conclusion, but as an approximation to the truth,—to the people and the region about Lake Baikal. Through the Slaves and Burats of that region the short-headed races of Eastern Europe graduate apparently into the Kalmucks and Mongols proper of Asia; and here probably is a remarkable example of an artificially modified cranium of that transitional people of Lake Baikal. If these deductions are hereafter confirmed, we are thus guided by a process of purely scientific induction far beyond the limits assigned by Hippocrates, Strabo, Pliny, or Mela, to the Asiatic Macrocephali; and recover traces of the strange practice of the American Flatheads far to the northeast of the Altai chain, in the valleys that skirt the Yablonoi mountains, as they trend eastward towards the Okhotsk Sea. There it is, in the vast unknown regions of Asiatic Russia, that we may hope to recover evidence confirmatory of the Asiatic relations of the American race.

But as attention is directed to the proofs of artificial modifications of the form of the human head practised by diverse tribes and nations of the Old World, new and unexpected disclosures tend still further to enlarge the areas of such operations. Dr. Foville, a distinguished French physician, at the head of the Asylum for the Insane in the department Seine-Inférieure and Charenton, has brought to light the remarkable fact that the practice of distorting the skull in infancy still prevails in France, by means of a peculiar head-dress and bandages; and in his large work on the Anatomy of the Nervous System, he has engraved examples of such compressed heads, one of which might be mistaken for a Peruvian relic. The practice is probably one inherited from times of remote antiquity, and is found chiefly to characterize certain districts. Normandy, Gascony, Limousin, and Brittany are specially noted for its prevalence, with some local variations as to its method and results. Like other ancient customs, it is probably pursued with the unreasoning adherence to immemorial usage by which many equally useless practices have been perpetuated, and with no definite aim at changing the form of the head.

In a section devoted to Distortions of the Skull, in the *Crania Britannica*, two remarkable examples are engraved, derived from Anglo-Saxon graves, and others are referred to, found in British barrows; but those Dr. Thurnam and Dr. Davis concur in ascribing to causes operating subsequently to interment. The influence to which such posthumous change of cranial form is chiefly ascribed, is the pressure of the superincumbent earth upon the skulls where bodies have been interred, unprotected by coffins, and exposed to an unusual amount of moisture.

The geologist has long been familiar with the occurrence of skulls distorted, or completely flattened, and even with solid bones and shells which have undergone remarkable transformations, by compression or distension operating on their rocky matrix before it assumed its final consolidation. In some of those cases, however, the palæontologist looks in reality only on the cast of the ancient bone or shell, compressed along with its once plastic matrix, probably at a date long subsequent to its original deposition. But the distortion by which the human skulls referred to have acquired their abnormal shape, must have taken place while the animal matter still remained in sufficient abundance to preserve the original flexibility of the bones. At the base of the Montreal mountain, on a site identified with much probability as that of

Hochelaga, an Indian village visited by Cartier in 1535, an ancient cemetery has recently been brought to light. Two of the skulls recovered from it, now in the Museum of M'Gill College, Montreal, are those of a man and woman, whose remains were found together, as they had been buried, in the sitting or crouching position common in Indian sepulture. The female skull has the superciliary ridge very prominent, with a groove above it, while a prolongation of the occiput, frequently seen in the female cranium, gives a peculiarly marked predominance to the longitudinal diameter. The other is the skull of a man about forty years of age, approximating to the common proportions of the Algonquin cranium, but presenting unmistakable indications of having undergone alteration in shape subsequent to interment. It is marked by great but unequal depression of the frontal bone, with consider-

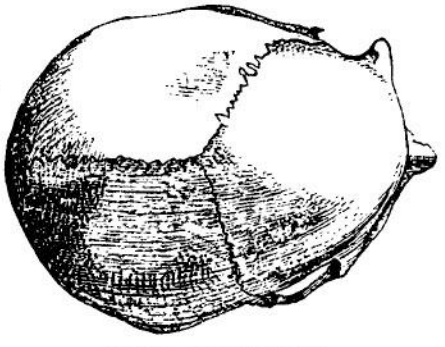


FIG. 67.—Hochelaga Skull.

able lateral distortion, accompanied with bulging out on the right side, and an abnormal configuration of the occiput, suggestive at first sight of the effects of the familiar native processes of artificial malformation during infancy. Such an idea, however, disappears on minute inspection, and it seems impossible to doubt that, in this Indian skull, we have a very striking example of posthumous distortion. The right side of the forehead is depressed, and recedes so far behind the left, that the right external angular process of the frontal bone is nearly an inch behind that of the left side. The skull recedes proportionally on the same side throughout, with considerable lateral development at the parietal protuberance, and a projection behind on the right side of the occiput; which is further marked by the occurrence of an irregular group of Wormian bones. The right superior maxillary and malar bones have become detached from the calvarium, but the nasal bones, and part of the

left maxillary, still adhere to it, exhibiting in the former the evidence of the well-developed and prominent nose, characteristic of Indian physiognomy. The bones of the calvarium have retained their coherence, notwithstanding the great distortion which has taken place, although the sutures remain entirely unossified, and must have given way under any unequal pressure. The only exceptions to this are: the left temporal bone, which is so far displaced as to detach the upper edge of the squamous suture; and the basilar portion of the occipital bone, part of which is wanting. On examining the base of this skull, the posthumous origin of its distortion is most readily perceived; and this is proved beyond doubt on replacing the condyles of the lower jaw in apposition with the glenoid cavities, when it is seen that instead of the first teeth meeting the corresponding ones of the upper jaw, the lower front right and left incisors both impinge on the first right canine tooth of the upper maxillary, and the remaining teeth are thereby so placed as to preclude the possibility of their use in mastication, had such been the relative position of the jaws during life. The same distortion which has thus displaced the glenoid cavities, has produced a corresponding change on the position of the mastoid processes, which are twisted obliquely, so that the left one is more than an inch in advance of the right.

The circumstances under which the Hochelaga skull was found, tend to throw some light on the probable causes which may effect such posthumous malformation. It was covered by little more than two feet of sand, the pressure of which was in itself insufficient to have occasioned the change of form. The internal cavity, moreover, was entirely filled with the same fine sand in which the skull was embedded. If, therefore, we conceive of the body lying interred under this slight covering of soil until all the tissues and the brain had disappeared, and the infiltration of the fine sand had filled the hollow brain-case; and then, while the bones were still replete with animal matter, and softened by being embedded in moist sand, and filled with the same, if some considerable additional pressure, such as the erection of a heavy structure, or the sudden accumulation of any weighty mass, took place over the grave, the internal sand would present sufficient resistance to the superincumbent weight, applied with nearly equal pressure on all sides, to prevent the crushing of the skull, or the displacement of the bones, while they would readily yield comformably to the general compression of the mass. The skull would thus be sub-

jected to a process closely analogous to that by which the abnormal developments of the Flathead crania are effected during infancy, accompanied by great relative displacement of the cerebral mass, but by little or no diminution of the internal capacity.

In the remarkable example in Dr. Thurnam's collection, of a distorted Anglo-Saxon skull, from Stone, in Buckinghamshire,[1] there are indications, especially in the detached and gaping sutures on the base, that it has been subjected to an extraordinary amount of oblique posthumous compression. But such posthumous changes of form are not to be confounded with the more numerous class effected on the living head. Crania recovered from British stone cists, entirely protected from contact with the soil, frequently exhibit considerable irregularity of form, arising from accidental deformation during life; and corresponding modern examples are less rare than is supposed. The normal skull may be assumed to present a perfect correspondence on its two sides, but very few examples fully realize the requirements of such a standard. Not only is inequality in the two sides of frequent occurrence, though not to the extent of deformity exhibited in the skull from Stone, in Buckinghamshire, or that of the Indian cemetery of Hochelaga; but a perfectly symmetrical skull is the exception rather than the rule. The plastic character of the bones of the head during infancy, which so readily admits of purposed deviation from its natural form, also renders it liable to many undesigned changes; nor has this been overlooked by Morton and other American cranioscopists, who concur in assigning the predominant vertical occiput to the pressure of the Indian cradle acting upon a naturally brachycephalic head. Dr. Morton remarks of the Peruvian skulls examined by him: "These heads are remarkable not only for their smallness, but also for their irregularity, for, in the whole series in my possession, there is but one that can be called symmetrical. This irregularity chiefly consists in the greater projection of the occiput to one side than the other, showing, in some instances, a surprising degree of deformity. As this condition is as often observed on one side as the other, it is not to be attributed to the intentional application of mechanical force; on the contrary, it is to a certain degree common to the whole American race, and is sometimes no doubt increased by the manner in which the child is placed in the cradle. I am in fact convinced, that among the collection of Peruvian skulls alluded to, there is not one that has been designedly moulded, by art."[2]

[1] *Crania Britannica*, chap. iv. p. 38. [2] *Crania Americana*, p. 115.

The latter opinion is wholly untenable; but numerous examples of unsymmetrical heads are traceable to the operation of external causes undesignedly modifying them in infancy; as in more than one case which has fallen under my notice of heads flattened on one side, and otherwise deformed, owing to the mother being able only to suckle at one breast.[1] The skull during infancy is in so pliant a condition as to be peculiarly susceptible of abnormal changes of form, which may be carried to a great extent without materially affecting the functions of the brain. Moreover, it is apparent, from illustrations already referred to, that many undesigned changes may be effected on the form of the head, by specialties pertaining to modes of nursing, or the prevailing treatment to which children are subjected. The cranial form, designated by M. Foville the *Tête annulaire,* may have predominated for many centuries through certain rural districts of France, solely from the unreasoning conformity with which the rustic nurse adhered to traditional and prescriptive usages, such as all experience assures us are among the most likely customs to survive the shock of revolutions. The mode of nursing and carrying the infant, as among certain African tribes, where it is borne on the back, and suckled over the shoulder; or with the American Indians, where it is almost invariably strapped tightly on a cradle-board: must have had some effect on the form of the skull, and even, in the former, may have affected the bones of the face; whilst the opposite practice of suckling the child at the breast, and laying it to sleep from earliest infancy on its side, especially if accompanied with a persistent adherence to one side, must tend to modify the cranial form in an inverse direction.

Dr. Morton recognised this element, as one tending to exaggerate, though not, as he believed, wholly to produce the flattened occiput, assigned by him as one of the cranial characteristics of the American aborigines. Nor did he fail to note the frequent irregularities observable in the class of skulls to which his attention was specially devoted. Of the Scioto Mound cranium, he remarks, in reference to its vertical occiput: "Similar forms are common in the Peruvian tombs, and have the occiput, as in this instance, so flattened and vertical, as to give the idea of artificial compression; yet this is only an exaggeration of the natural form caused by the pressure of the cradle-board in common use among the American nations." When commenting on this, in discussing the supposed

[1] Vide *Canadian Journal*, vol. vi. 414; vii. 399; viii. 127.

prevalence of one cranial type throughout the American aborigines,[1] I expressed my belief that further investigation would tend to the conclusion that the vertical or flattened occiput, instead of being typical, pertains to the class of artificial modifications, familiar to the American ethnologist, alike in the disclosures of ancient graves, and in the customs of widely-separated living tribes. Vesalius is quoted, in the *Crania Britannica*, as affirming that the Germans of his day, the middle of the sixteenth century, had a broad head with compressed occiput, which he attributed to the custom of binding infants in cradles upon their backs. In commenting on the assumed irregularity of conformation in American crania, I remarked, in the paper already referred to, "I have repeatedly noted the like unsymmetrical characteristics in the brachycephalic crania of the Scottish barrows; and it has occurred to my mind on more than one occasion, whether such may not furnish an indication of some partial compression, dependent, it may be, on the mode of nurture in infancy having tended, in their case also, if not to produce, to exaggerate the short longitudinal diameter, which constitutes one of their most remarkable characteristics." The first British example of this peculiar formation which attracted my attention, and suggested the idea of its probable origin from artificial causes, was recovered from a stone cist, accidentally discovered at Juniper Green, near Edinburgh, in May 1851. The circumstances of its discovery are described, and other Scottish examples of the vertical or obliquely flattened occiput referred to in my *Prehistoric Annals of Scotland*,[2] and more recently His Grace the late Duke of Northumberland showed me, at Alnwick Castle, the skull of a youth, recovered, along with an urn, from a stone cist in Hulne Park, in which the same occipital peculiarity is noticeable. Dr. L. A. Gosse arrives at a like conclusion on the general subject; and, after commenting on the prevalence of this formation in American crania, he remarks: "Passing to the Old World we cannot hesitate to recognise that the flat and hard cradle has there produced analogous effects. The ancient inhabitants of Scandinavia and Caledonia practised the same custom, if one may judge from the form of their skulls."[3] Drs. Thurnam and Davis recognise the same cause, in the later decades of their *Crania Britannica*, as one of the artificial sources of conformation affecting an important

[1] *Canadian Journal* (1857), vol. ii. p. 406.
[2] *Prehistoric Annals of Scotland*, 2d. ed. vol. i. p. 271.
[3] *Essai sur les Déformations artificielles du Crâne*, p. 74.

class of skulls derived from British graves. Mr. Thomas Bateman also noted the form occurring in crania obtained by him from Derbyshire barrows, as described in his *Ten Years' Diggings in Celtic and Saxon Grave Hills.*

This source for one peculiar class of brachycephalic skull-forms, and the inference deducible from it, that the cradle-board was in use among primitive races of Britain and the north of Europe, at some remote period, are thus sanctioned by the concurrence of distinguished European craniologists. Dr. J. Barnard Davis, in referring to the subject remarks: "The bones of the head are very pliant in infancy, and are easily moulded to an artificial form. Among the Kanakas of the Sandwich Islands, the mother's habit of supporting the head of her nursling in the palm of her left hand, is considered to produce the flatness in the occipital region so commonly observed in Kanaka skulls. Here, again, natural conformation affords the basis of that brachycephalic form which is increased by art."[1] But Dr. Nott and Dr. Pickering had already noted that the flattened occiput is found among the islanders of the Southern Ocean, directly traceable to artificial pressure. In commenting on the characteristics of the Malay race, Dr. Pickering remarks: "A more marked peculiarity, and one very generally observable, is the elevated occiput, and its slight projection beyond the line of the neck. The face, in consequence, when seen in front, appears broader than among Europeans, as is the case with the Mongolian, though for a different reason. In the Mongolian the front is depressed, or the cranium inclines backwards, while in the Malay it is elevated or brought forwards. The Mongolian traits are heightened artificially by the Chinooks; but it is less generally known that a slight pressure is often applied to the occiput by the Polynesians, in conformity with the Malay standard."[2] Dr. Nott also describes the same peculiar conformation in the head of a Kanaka who died at the Marine Hospital at Mobile. "The skull," he says, "was presented to Agassiz and myself for examination without being apprised of its history. Notwithstanding there was something in its form which appeared unnatural, yet it resembled more than any other the Polynesian; and as such we did not hesitate to class it. It turned out afterwards that we were right; and that our embarrassment had been produced by an artificial flattening of the occiput, which process the islander, while at the hospital, had told Drs. Levert and Martin was habitual

[1] *Crania Britannica*, Decade iii.
[2] Pickering's *Races of Man* (Bohn), p. 45.

in his family."[1] Dr. J. B. Davis has procured a large series of Kanaka skulls, chiefly through the intervention of the British Consul-General at Honolulu, and in many of them the same flattening of the occiput is often remarkably expressed.[2] I have myself noted it clearly defined in at least three of the Kanaka skulls in the Academy of Natural Sciences at Philadelphia; and more recently, during a prolonged visit to Washington, I had repeated opportunities of carefully studying the collection of crania formed by the United States' Exploring Expedition. These are chiefly derived from the islands of the Pacific, and include fourteen Kanaka skulls. Both in those from the Sandwich Islands, and from other archipelagos of the Pacific, several striking examples of the artificially flattened occiput confirm the opinions formed by Dr. Pickering from his ample opportunities of observation, and his comparison of the Asiatic Mongolian and the islanders of the Pacific.

Professor Retzius, after commenting on the unnatural deformations which mediæval chroniclers describe as characteristic of the Huns, adds: "Thus we see more and more traces showing that this absurd custom has been common in the ancient world, and, after the authority of Thierry, we may suppose that it principally, and perhaps originally, belonged to the Mongols."[3] But it is among these very Mongols that Dr. Pickering classes the Chinook Flatheads and all the Indians of the American continent; and thus, by the help of ancient historians and geographers, and recent discoveries and observations of scientific men, we recover traces of this strange custom of artificial distortion of the skull in ancient European cemeteries among the valleys of the Alps, on the banks of the Danube and the Don, and on the shores of the Euxine Sea. Beyond this the same practice is traced, in ancient times, to the valleys of the Caucasus and the shores of the Caspian Sea; and as we follow back the track of the Huns and Avars, by whom it seems to have been introduced into Europe, we lose the traces of it among the unfamiliar Siberian steppes of Northern Asia; and only recover them once more after crossing Behring Straits, and investigating the strange customs which pertain to the American tribes on the Pacific Coast, and in the regions which lie to the west of the Rocky Mountains.

The artificial forms given to the human head by the various

[1] *Types of Mankind*, p. 436. [2] *Crania Brit.*, Decade iii. pl. 23, p. 4.
[3] "On Artificially-formed Skulls from the Ancient World," *Proceed. Acad. Nat. Sciences, Philadelphia*, vol. vii. p. 405.

tribes among whom the custom has been practised in ancient and modern times, though divided by Dr. Gosse of Geneva into sixteen classes, range between two extremes. One of these is a combined occipital and frontal compression, reducing the head as nearly as possible to a disk, having its mere edge laterally, as in the very remarkable Natchez skull, engraved in the *Crania Americana* (Plates XX., XXI.), or in Cawwachan, a woman of the Cowlitz tribe of the Flathead Indians, painted from life by Mr. Paul Kane, during his wanderings among the tribes on the Cowlitz river.[1] The other form, which is more common among the flathead tribes on the Columbia river and its tributaries, depresses the forehead, and throws back the whole skull, so as to give it a near approximation to that of a dog.

The influence of premature ossification of the sutures on the production of certain abnormal skull-forms has of late years attracted considerable attention. In 1851, Professor Virchow of Berlin described and figured various abnormal forms dependent, as he conceived, on the arrestment of development in certain directions by synostosis.[2] Subsequently Dr. Minchin, of Dublin, traced a peculiar elongated head to the absence of the sagittal suture;[3] and Dr. Wm. Turner, of Edinburgh, in a memoir submitted to the British Association in 1863, defines among the chief sources of cranial deformation "the premature or retarded union of the cranial bones at their sutures;" and specially refers to the former of these causes certain Scottish examples of the peculiar elongated skull, to which Professor von Baer, of St. Petersburg, has applied the name scaphocephalic.[4] The impediments to lateral or vertical enlargement of the cranium, consequent on the closing of the sagittal suture, and the subsequent expansion of the brain exclusively in an antero-posterior direction, must inevitably tend to the production of an elongated skull; while, on the contrary, the premature ossification of the sphenoidal and coronal sutures leaves the brain free to expand only in a lateral and vertical direction. But it is necessary, in studying the relations traceable between the conditions of the sutures and the form of the head, to guard carefully against mistaking cause for effect.

Since the publication of the first edition of this work I have

[1] *Wanderings of an Artist among the Indians of North America*, p. 205.
[2] *Wurzburg Verhand.* Bd. 2. S. 230. apud W. Turner, B.D.
[3] *Dublin Quart. Medical Journal*, vol. xxii. p. 350.
[4] *Nat. Hist. Review*, No. xiii. p. 88, Jan. 1864.

availed myself of renewed opportunities for minutely examining the large collection of artificially flattened crania in the Mortonian Collection at Philadelphia; and of another at Washington, including thirty-four Flathead skulls obtained by the United States' Exploring Expedition on the Oregon Coast and the Columbia River. Many of those have been subjected to extreme and protracted pressure, resulting in great deformity; and in the majority of these synostosis has taken place in the direction of greatest pressure, to so great an extent that in some cases the suture is entirely obliterated. In several of them the opposite sutures are not only detached but even disengaged. The pressure has also in

FIG. 68.—Newatee Chief.

some cases developed false sutures; and to the same cause may probably be traced the frequent occurrence of Wormian bones, and of a well-defined supra-occipital. In all those examples the ossification of the sutures is clearly the result, and not the cause, of the influence which produced the peculiar cranial deformations. But it is marvellous to see the extraordinary amount of distortion to which the skull and brain may be subjected, without seemingly affecting the essential elements of healthy growth.

Fashion regulates to some extent the special form given to the head among various tribes; but this is modified by individual caprice, and a considerable variety is observable in the strange shapes which it is frequently forced to assume. The Newatees, a

warlike tribe on the north end of Vancouver's Island, give a conical shape to the head by means of a cord of deer's-skin padded with the inner bark of the cedar-tree, frayed until it assumes the consistency of very soft tow. This forms a cord about the thickness of a man's thumb, which is wound round the infant's head, compressing it gradually into a uniformly tapering cone. The process seems neither to affect the intellect nor the courage of this people, who are remarkable for cunning as well as fierce daring, and are the terror of all the surrounding tribes. The effect of this singular form of head is still further increased by the fashion of gathering the hair into a knot on the crown of the head, as shown in the accompanying portrait of a Newatee chief (Fig. 68), from a sketch taken by Mr. Paul Kane during his visit to Vancouver's Island.

The Flatheads extend over a wide range of country from 130 miles up the Columbia river to its mouth, and along the Pacific coast and the Straits of De Fuca, Puget's Sound, and Canal Diaro to near the mouth of Fraser's river; as well as on Vancouver's Island. They include fully twenty different tribes, among which are the Cowlitz Indians on the river of that name; the Chinooks, Klatsaps, Klickatats, and Kalponets on the Columbia river; the Chastays south of the Columbia, near the river Umqua; the Klackamuss on the river of the same name in Oregon; the Nasquallies, Sinahomas, and Cumsenahos on Puget's Sound; the Songas and Eusāniches on the southern shores of the Straits of De Fuca; the Towanachuns on Whitby's Island; the Cowitchins on the Gulf of Georgia; and the Clalams and Newatees on Vancouver's Island. Greatly varying dialects are spoken among these Flathead tribes; and as the *lingua Franca* of Oregon is the usual means of communication between them and the Whites, the little knowledge of their languages hitherto obtained has been too vague to be of much value.

During Mr. Paul Kane's travels among those tribes, he saw hundreds of children undergoing the process of flattening the head, and thus describes the mode of procedure. The infant is strapped to the cradle-board, which is covered with moss of finely frayed fibres of cedar-bark, and is fitted with a head-board projecting beyond the face, so as to protect it from injury; as shown in the frontispiece. In order to flatten the head, a pad, made of a piece of skin stuffed with soft cedar-bark, is laid on the infant's forehead, and on the top of this a slab of hard bark with the smooth side under. This is covered with a piece of pliant deer-skin, and bound

tightly by means of a leathern band passing through holes in the cradle-board. Other pads are placed under the head, and at its sides, according to the special form aimed at; and it is supported and kept in an immovable position by a pillow of grass or frayed cedar-bark under the back of the neck. This process commences immediately after the birth of the child, and is continued for a period of from eight to twelve months, by which time the head has permanently assumed the flattened or wedge-shaped form, which constitutes the ideal of Chinook or Cowlitz grace. Mr. Kane remarks: "It might be supposed, from the extent to which this is carried, that the operation would be attended with great suffering, but I never heard the infants crying or moaning, although I have

FIG. 69.—Flathead Child.

seen the eyes seemingly starting out of the sockets from the great pressure. But, on the contrary, when the thongs were loosened, and the pads removed, I have noticed them cry until they were replaced. From the apparent dulness of the children whilst under the pressure, I should imagine that a state of torpor or insensibility is induced, and that the return to consciousness occasioned by its removal, must be naturally followed by the sense of pain." The woodcut, Fig. 69, is from a careful sketch of a Chinook child, made at Fort Astoria on the Columbia river, and illustrates the extraordinary appearance of the Flatheads at an early age. Mr. Hale, the ethnographer of the Exploring Expedition, in narrating his observations in the same locality, remarks: "The appearance of the child when just released from this confinement is truly hideous.

The transverse diameter of the head above the ears is nearly twice as great as the longitudinal, from the forehead to the occiput. The eyes, which are naturally deep set, become protruding, and appear as if squeezed partially out of the head;"[1] or, as Mr. Kane somewhat graphically described them to me, resembling those of a mouse strangled in a trap. The appearance is little less singular for some time after the child has been freed from the constricting bandages; but the brain in its process towards maturity seems partially to recover its form, especially where the pressure has been applied so as to produce the elevated wedge shape, with the breadth of the whole mass presented in front and rear; as in the accompanying example. In this the head seemed to be reduced almost to a disk, exhibiting the results of the barbarous practice to an extent rarely if ever observed in adults who have undergone the same process in infancy. Dr. Pickering, Mr. Hale, and Mr. Kane all agree in the conclusion that this violent process in no degree injures the health; and from inquiries made by them it did not appear that the mortality among the Flathead children is greater than amongst other Indian tribes.

The evidence that cranial deformation leaves the intellect unimpaired rests on more absolute proof. The Flathead tribes are in the constant habit of making slaves of the neighbouring round-headed Indians, whom they treat with great barbarity; and though living among them, these are not allowed to flatten or modify the form of their infants' heads, that being a distinguished mark of freedom, and the badge of aristocratic descent. They look accordingly with contempt on the whites as a people who bear in the shape of their heads the hereditary mark of slaves. They are, moreover, acute and intelligent, generally drive a hard bargain in the sale of their furs, possess singular powers of mimicry, and have been noted for very retentive memories: being capable of repeating passages of some length, with considerable accuracy, when recited in their hearing. It would, indeed, appear that, alike in the time of Hippocrates and in our own day, an idea has prevailed among those who practised the same strange barbarian usage, that they thereby not only conferred an added grace to the form, but contributed no less to the mental superiority of those who adopted this peculiar symbol of aristocracy. If it did, in reality, tend either to mental inferiority or absolute insanity, it would lead to speedy and inevitable revolutions among those tribes where the helots are

[1] *Ethnography of the U. S. Exploring Expedition*, p. 216.

rigorously excluded from the practice. But neither among the Peruvians, nor the ancient or modern North American tribes, is there any evidence of the normal craniuin having thus practically demonstrated its superiority over the deformed or flattened skull.

It is an important fact that—excepting on the Gulf of Florida, where the north-west tribes overlapped the mountain range which divides the Pacific from the Atlantic regions, and there only to the west of the Mississippi,—the traces of artificial moulding of the head are slight and quite exceptional, to the east of the Rocky Mountains; whilst along the regions that border on the Pacific they reach beyond the most southern limits of ancient Peru. Dr. Morton quotes various early Spanish historians and travellers who describe the Peruvian flattening or moulding of the skull as having been effected by means of boards strapped on the head, and thereafter by ligatures. Garcilasso de la Vega produces proof to show that the custom is more ancient than the Inca dynasty; and it continued in such favour after the conquest, that a decree of the Ecclesiastical Court of Lima, published in 1585, threatens with severe penalties all parents found persisting in the practice. But perhaps the most interesting passage is one from the writings of Torquemada, where, referring to the Peruvians, he remarks: "As to the custom of appearing fierce in war, it was in some provinces ordered that the mothers or their attendants should make the faces of their children long and rough, and the foreheads broad, as Hippocrates and Galen relate of the Macrocephali, who had them moulded by art into the elevated and conical form. This custom," he adds, "is more prevalent in the province of Chicuito, than in any other part of Peru." In spite of ecclesiastical censures and penalties, it is not even now extinct there; and as our knowledge of the tribes of Northern Asia, and minuter observations on those of the Polynesian Islands, are extended, we may anticipate the recovery of further traces of the same practice, which seems to furnish another curious link between races of the Old and the New World.

CHAPTER XXII.

THE RED BLOOD OF THE WEST.

THE INDIGENOUS RACE—HISTORICAL RECORDS PERISHING—EXTINCTION OF NATIONS—AMERICAN ISOLATION—THE AMERICAN MONGOL—THE BLESSING OF SHEM—THE CANAANITES—THE MEDITERRANEAN SHORES—EXTIRPATION OF THE CANAANITES—DISPLACEMENT AND EXTINCTION—ABSORPTION—RED AND WHITE BLOOD—AMERICAN HALF-CASTES—FIRST STAGE OF COLONIZATION—DISPROPORTION OF SEXES—TRIBE OF HALFBREEDS—WHITE AND INDIAN INTERMARRIAGE—RED RIVER HALFBREEDS—THE HALFBREED HUNTERS—APTITUDE OF SELF-GOVERNMENT—THE EURO-AMERICAN—INDIAN EXTERMINATIONS—THE CANADIAN NATIONS—THE NEUTRAL NATION—THE HURONS AND ERIES—THE MOHAWKS—DESTINY OF THE IROQUOIS—THE CHEROKEES—SLAVEHOLDING INDIANS—INDIAN COLOUR—INDIANS OF LOWER CANADA—IROQUOIS OF ST. REGIS—THE ABENAKIS—THE HURONS OF LORETTE—THE MICMACS—THE MONTAGNARS—THE UNSETTLED TRIBES—INDIANS OF UPPER CANADA—WYANDOTS OF ANDERDON—BAY OF QUINTE MOHAWKS—THEIR MIXED BLOOD—SOURCES OF HYBRIDITY—THE ONEIDAS—THE SEMI-CIVILIZED INDIANS—RELATIONS OF THE WHITE AND RED RACES—BLENDING OF ETHNICAL ELEMENTS.

THE theory of an aboriginal unity pervading one indigenous American race from the Arctic Circle to Tierra del Fuego has been shown to be baseless. The proof that the American man is in any sense separated by essential physical differences from all other nations or races of the human family, in like manner fails on minute examination. The typical white, red, and black man, placed side by side, do indeed present strikingly contrasting characteristics; and the author still recalls with vivid force the question forced on his mind when, seated for the first time at a large public table in a southern American city, he found himself surrounded by the proscribed pariah race of Africa. A servile people, isolated from all community of interests, and from all share in the wondrous triumphs of the dominant race, presented itself there under aspects scarcely conceivable to the European, who sees a stranger of African blood mingle occasionally, like any other foreigner, in public assemblies or social circles, without being tempted to ask: Can he be indeed of one blood, and descended of the same parent stock with our-

selves? But the isolation of the Red Man is even greater, for it is voluntary and self-imposed. No prejudice of caste precludes him from equality of intercourse with the white supplanter. Intermarriage of the races carries with it no sense of degradation, and intermingling of blood involves no forfeiture of rights or privileges. Yet with all the advantages from which the African race is utterly excluded, he yields his ground even more rapidly than the encroachments of the intrusive supplanters demand; and disappears scarcely less swiftly under the guardianship of friendly superintendents and missionary civilizers, than when exposed to the exterminating violence of Spanish cupidity.

Upwards of three centuries and a half have elapsed since the landing of the Spanish discoverers on the first-seen island of the Western Hemisphere; and it may be doubted if a single year has passed since that memorable event, in which some historical memorial has not perished. But the most valuable and irrecoverable of all those records are the nations that have died and left no sign. The native races of the islands of the American archipelago have been exterminated; and of many of them scarcely a relic of their language, or a memorial of their arts, social habits, or religious rites, survives. So, in like manner, throughout the older American States, in Canada, and over the region which spreads westward to the Rocky Mountains, whole tribes and nations have disappeared, without even a memorial-mound or pictured grave-post to tell where the last of the race is returning to the earth from whence he sprung. But such being the case, it is impossible, while regarding the claims of the American as a strictly indigenous race, to overlook the significant fact, that the negro, a foreign race, most diverse of all from the aborigines of the New World, was introduced there solely because of a capacity of endurance and perpetuity, which is wanting in the children of the soil. This capacity of endurance experience has proved him to possess; and the fact is singularly at variance with the supposed application of the same laws to the races of man which control the circumscription of the natural provinces of the animal kingdom.

The aborigines of America are indeed a people by themselves. For unknown ages they have developed all the results of physical influences, habits of life, and whatever peculiarities pertained to their geographical position, or their primeval American ancestry. Yet when we go beyond that continent which has isolated them through all the unmeasured centuries of their independent existence, it is on the neighbouring one of Eastern Asia that we find an

ethnic type so nearly resembling them, that Dr. Charles Pickering, the ethnologist of the American Exploring Expedition, groups the American with the Asiatic Mongolian, as presenting the most characteristic physical traits common to both. And as the American thus presents a striking ethnical affinity to the Asiatic Mongol; so also the same physical diversities have been noted among different tribes and nations of the New World, by which other great ethnographic groups are broken up into minor subdivisions, and so gradually converge from opposite points towards the ideal type of a common humanity. But while those who maintain the existence of essentially primary distinctions among a plurality of human species, explain such convergence towards one common type by the further theory of remote, allied, and proximate species, they accompany this with the idea that even the commingling of proximate species is opposed to natural laws, and involves the ultimate destruction of all; while the rapid extinction of the inferior types of man when "remote species," such as the European and the Red Indian, are brought into contact and commingle, is produced in evidence of an essential and primary distinction in their origin. "Sixteen millions of aborigines in North America," exclaims Dr. J. C. Nott, "have dwindled down to two millions since the 'Mayflower' discharged on Plymouth Rock; and their congeners, the Caribs, have long been extinct in the West Indian Islands. The mortal destiny of the whole American group is already perceived to be running out, like the sand in Time's hour-glass."[1]

By whatsoever means we may attempt to account for this rapid diminution of the aborigines, the fact is undoubted. Nor is this displacement and extinction of races of the New World, thus prominently brought under our notice as in part the result of our own responsible acts, by any means an isolated fact in the history of nations. The revelations of geology disclose displacement and replacement as the economy of organic life through all the vast periods which its records embrace; and among the many difficult problems which the thoughtful observer has to encounter, in an attempt to harmonize the actual with his ideal of the world as the great theatre of the human family, none is more intricate and perplexing than the extinction of races, such as has been witnessed on the American continent since the European gained a footing on its shores. But the very existence of a science of ethnology results from the recognition of essential physical and moral differences

[1] "Hybridity of Animals, viewed in connexion with the Natural History of Mankind."—*Types of Mankind*, p. 409.

characteristic of the subdivisions of the human family. To some those resolve themselves into the radical distinctions of diverse species; to others the well-ascertained development of varieties within recognised groups of a common descent, sufficiently accounts for the most marked diversities from a normal type of the one human species. On the latter theory, the New World presents all the requisites for such a development of variation from the primary type.

The whole history of civilisation limits its Asiatic origin to the shores of the Indian Ocean and the Mediterranean Sea, and to the great plain watered by the Tigris and the Euphrates. From thence its path has been undeviatingly westward, and the New World has been reached by the daring enterprise that made of the ocean a highway to the West which lay beyond it. But it is in the great steppes of Northern Asia, where civilisation has never dawned, that the eastern Mongol presents the unmistakable approximation to the American type of man. Through all the centuries during which the historic nations have figured in the drama of the world's history, since Asshur and Nimrod founded the first Asiatic kingdoms, the unhistoric nations have also played their unheeded parts. Westward in the path of the sun, went the ruling nations, shaping out the world's destinies in the northern hemisphere; but eastward, meanwhile, wandered the nomade tribes, filled up the great Asiatic steppes, occupied the unclaimed wastes along the Arctic circle, and found an easy passage by their eastern route to the Western Hemisphere. That this is not the only, nor probably the earliest route from Asia to America, will be seen hereafter; but it suffices for the present argument that access was thus possible. There settled, they took possession of a continent as different in every physical characteristic from that of Europe as it is possible for countries within the same parallels of latitude to be. In vain we search through all the world's ancient and mediæval history for a definite trace of intercourse between the two hemispheres; and when at length, in 1492, Columbus opened for us the gates of the West, it was the meeting of those who, by opposite courses, had fled from each other until the race engirdled the globe. Assuming their descent from a common protoplast: if climate, social habits, civilisation, and the perpetuation of special peculiarities, uninterruptedly in a single direction, are capable of producing a permanent variety of the human race, the continent of America, and its human occupants, presented all the requisites for its development.

But the circumstances in which man was placed on the Ameri-

can continent were not the most favourable for his ethnic and intellectual maturity. In single families, a great diversity of physical and intellectual capacity is apparent; and among the family of nations the Asiatic Mongol, who presents the closest affinity to the American Indian, occupies an inferior place. Brought from his wild steppes, directly in contact with the advanced civilisation of Europe, he is utterly incapable of standing his ground; yet when placed under favourable circumstances of training and pupilage, as seen in the older Hun, the Magyar, and the Turk, he is fully able to assert the claims of a common humanity. But no such opportunities were accorded to the American Mongol. We see him in the fifteenth and subsequent centuries brought into contact and collision with the most civilized nations of the world, in periods of their matured energy. It was the meeting of two extremes: of the most highly favoured among the nations triumphing in their onward progress not less by constitutional superiority than by acquired civilisation; and of the savage, or the semi-civilized barbarian, in the stages of national infancy and childhood. Their fate was inevitable. It does not diminish our difficulty in dealing with the complex problem, to know that such had been the fate of many races and even of great nations before them. But if we are troubled with the perplexities of this dark riddle, whereby the colonists of the New World, in their western progress, tread on the graves of nations they have supplanted: the consideration of some of the phenomena attendant on this same process of displacement and extinction, accompanying the human race from the very dawn of its history, may help to lessen the mystery.

One, and only one record supplies any credible statement on a subject concerning which the mythologies of all nations have professed to furnish some information. The Book of Genesis, or the Beginning, is divided into two separate and perfectly distinct histories: the first, an account of the Creation, and the general history of mankind till the dispersion, contained in the first ten chapters, and nine verses of the eleventh; while the remaining chapters, and indeed nearly the whole of the historical Books of the Old Testament, are exclusively devoted to the one selected race, that of Abraham and his descendants.

Looking then to the first of those, and to its narrative in relation to the immediate descendants of Noah, the recognised protoplasts of primary subdivisions of the human family, we perceive that certain permanent differences are assigned to each. Ham, the father of Canaan, is left without a blessing; while Canaan is

marked as the progenitor of a race destined to degradation as the servant of servants. The blessing of Shem is peculiar, as if it were designed chiefly to refer to the one branch of his descendants, "to whom pertained the adoption, and the glory, and the covenants, and the giving of the law, and the service of God." But to his various descendants a rank is assigned in the world's future: special, predominant in relation to some branches of the human family; but yet inferior and of temporary duration when compared with the destinies of the Japhetic nations, who, enlarging their bounds, and encroaching on the birthright of the elder races, are destined to "dwell in the tents of Shem," and Canaan shall serve them.

Thus we perceive that, on turning to the most ancient of all writings, in a record which deals with fundamental questions of ethnical science, one important subdivision of the human family is stamped, *ab initio*, with the marks of degradation; while another, the Shemitic, though endowed with special privileges, favoured as the originator of the world's civilisation, and set apart to furnish the chosen custodiers of its most valued inheritance, through centuries which anticipated the fulness of time: is nevertheless destined to displacement, for "Japhet shall be enlarged, and shall dwell in the tents of Shem."

Thus also, from the very first, clearly defined distinctions are apparent between diverse branches of the human family; and this, coupled with the apportionment of the several regions of the earth to distinct types of man, distinguished from each other not less definitely than are the varied *faunæ* of these regions, seems to express very clearly the subdivision of the genus *Homo* into varieties, with a certain relation to their primary geographical distribution.

There have been ingenious attempts made to assign to each generation of the Noachic family its national descendants; but the majority of such results commend themselves to our acceptance at best as only clever guesses at truth. Of the most remarkable of the Hamitic descent, however, we can be at no loss as to their geographical areas. The Canaanites occupied the important region of Syria and Palestine; and Nimrod, the son of Cush, moving to the eastward, settled his descendants on the banks of the Euphrates; so that of the distinctly recognisable generations of Ham, it is in Asia, and not in Africa, that we must look for them, for centuries after the dispersion of the family of Noah; while among those who, on such an assumption of descent, may be classed

with the offspring of the same father of nations, are the Mongol wanderers on the great steppes of Asia, and the region stretching eastward towards the passage to the New World.

But the Shemitic races were also to share the Eastern Continent before they enlarged their area, and asserted their right to the inheritance of the descendants of Ham. By Nimrod, the grandson of Ham, the settlements along the valley of the Euphrates were founded, "and the beginning of his kingdom was Babel, and Erech, and Accad, and Calneh, in the land of Shinar," all sites of ancient cities which recent exploration and discovery seem to indicate as still traceable amid the graves of the East's mighty empires. But the eponymus of the rival kingdom on the banks of the Tigris was Asshur, the son of Shem; and in that region also it would appear that we must look for the locality of others of the generations of the more favoured Shem; while nearly the whole habitable regions between their western borders and the Red Sea, were occupied from this very dawn of history, by the numerous Shemitic descendants of Joktan, of whom descended Mohammed and the first propagators of the monotheistic creed of the Koran; as the Hebrews, and through them, the great prophet of our faith, trace their genealogy from Eber, the assumed eponymus of those whom we must look upon, on many accounts, as important above all other Shemitic nations.

Deriving our authority still from the same record, we ascertain as the result of the multiplication and dispersion of one minutely detailed generation of the sons of Ham, through Canaan, that for eight hundred years thereafter they increased and multiplied in the favoured lands watered by the Jordan, and stretching to the shores of the Levant; they founded cities, accumulated wealth, subdivided their goodly inheritance among distinct nations and kingdoms of a common descent; and upwards of eleven hundred years afterwards, when the intruded tribe of Dan raised up the promised judge of his people, the descendants of Ham still triumphed in the destined heritage of the seed of Eber. At length, however, the Hebrew accomplished his destiny. The promised land became his possession, and the remnant of the degraded Canaanite his bond-servants. For another period of more than eleven hundred years, the Shemitic Israelites made the land their own. The triumphs of David, the glory and the wisdom of Solomon, and the vicissitudes of the divided nationalities of Judah and Israel, protracted until the accomplishment of the great destiny of the princes of Judah, constitute the

epos of those who supplanted the settlers in the historic lands lying between the mountains of Syria and the sea, when first "the Most High divided to the nations their inheritance, when he separated the sons of Adam, and set the bounds of the people." Then came another displacement. The Hebrews were driven forth from the land; and for eighteen hundred years, Roman and Saracen, Frank, Turk, and Arab, have disputed the possession of the ancient heritage of the Canaanite.

For very special and obvious reasons the isolation of the Hebrew race, and the purity of the stock, were most carefully guarded by the enactments of their great lawgiver, preparatory to their taking possession of the land of Canaan; yet the exclusive nationality and the strictly defined purity of race admitted of striking exceptional deviations. While the Ammonite and the Moabite are cut off from all permissive alliance, and the offspring of a union between the Hebrew and these forbidden races is not to be naturalized even in the tenth generation: the Edomite, the descendant of Jacob's brother, and the Egyptian, are not to be abhorred, but the children that are begotten of them are to be admitted to the full privileges of the favoured seed of Jacob in the third generation.

This exception in favour of the Egyptian is a remarkable one. The ostensible reason, viz., that the Israelites had been strangers in the land of Egypt, appears inadequate fully to account for it, when the nature of that sojourn and the incidents of the Exodus are borne in mind; and would tempt us to look beyond it to the many traces of Shemitic character which the language, arts, and civilisation of Egypt disclose. But its monuments reveal traces of many intruders; and beyond it, throughout the northern regions of the same continent, Phœnician and Greek, Berber, Roman, Arab, and Frank have mingled the blood of the ancient world. Around the shores of that expressively designated *Mediterranean* Sea how striking are the varied memorials of the past! A little area may be marked off on the map, environing its eastern shores, and constituting a mere spot on the surface of the globe; yet its history is the whole ancient history of civilisation, and a record of its ethnological changes would constitute an epitome of the natural history of man. All the great empires of the Old World clustered around that centre, and as Dr. Johnson remarked: "All our religion, almost all our law, almost all our arts, almost all that sets us above savages, has come to us from the shores of the Mediterranean." There race has succeeded race; the sceptre has passed from nation to nation,

through the historical representatives of all the great primary subdivisions of the human family, and "their decay has dried up realms to deserts." It is worthy of consideration, however, in reference to our present inquiries, how far the political displacement of nations in that primeval historic area was accompanied by a corresponding ethnological displacement and extinction.

It is in this respect that the sacred narrative, in its bearings on the primitive subdivisions of the human family, and their appointed destinies, seems specially calculated to suggest the initiatory steps in relation to some conclusions of general application. However mysterious it be to read of the curse of Canaan on the very same page which records the blessings of Noah and his sons, and the first covenant of mercy to the human race, yet the record of both rests on the same authority. Still more, the curse was what may strictly be termed an ethnical one. Whether we regard it as a punitive visitation on Ham in one of the lines of generation of his descendants, or simply as a prophetic foretelling of the destiny of a branch of the human family, we see the Canaanite separated at the very first from all the other generations of Noachic descent as a race doomed to degradation and slavery. Nevertheless, to all appearance, many generations passed away, in the abundant enjoyment, by the offspring of Canaan, of all the material blessings of the "green undeluged earth," while they accomplished, as fully as any other descendants of Noah, the appointed repeopling, and were fruitful and increased, and brought forth abundantly in the earth, and multiplied therein, even as did the most favoured among the sons of Shem or Japhet. When, some five centuries after the Canaanite had entered on his strangely burdened heritage, the progenitor of its later and more favoured inheritors was guaranteed, by a divinely-executed covenant, the gift to his seed of that whole land, from the river of Egypt to the great river, the river Euphrates, the covenant was not even then to take place until the fourth generation. When this appointed period had elapsed, and only the narrow waters of the Jordan lay between the sons of Israel and the land of the Canaanites, their leader and lawgiver, who had guided them to the very threshold of that inheritance on which only his eyes were permitted to rest, foretold them in his final blessing: "The eternal God shall thrust out the enemy from before thee, and shall destroy, and Israel shall dwell in safety alone." No commandment can be more explicit than that which required of the Israelites the utter extirpation of the elder occupants of their inheritance:

"When the Lord thy God shall bring thee into the land, and hath cast out before thee seven nations greater and mighter than thou, thou shalt smite them and utterly destroy them; thou shalt make no covenant with them, nor shew mercy unto them." Nevertheless we find that the Israelites put the Canaanites to tribute, and did not drive them out; neither did they expel the Geshurites nor the Maachathites, but these dwelt still among the Israelites when the sacred narrative was penned. The children of Benjamin did not drive out the Jebusites; but according to the author of the book of Judges, they still dwelt there in his day along with Canaanites, Hittites, Amorites, Perizzites, and Hivites; and the children of Israel took their daughters for wives, and gave them in marriage to their sons. The Gibeonites also obtained by craft a league of amity with Israel, and remained: bondmen, hewers of wood, and drawers of water; yet so guarded by the sacredness of the oath they had extorted from their disinheritors, that at a long subsequent date we find seven of the race of their supplanters, the sons and grandsons of the first Israelitish king, sacrificed to their demand for vengeance on him who had attempted their extirpation.

Even more remarkably significant than all those evidences of a large remnant of the ancient population surviving in the midst of the later inheritors of Canaan, and intermingling with them, is the appearance of the names of Rahab, the harlot of Jericho, and Ruth the Moabitess, in the genealogy of Joseph, as recorded by Matthew. The purity of descent of the promised seed of Abraham and David was most sacredly guarded through all the generations of their race, yet even in that line these remarkable exceptions are admitted; and the son of Ham, and the seed of Moab, have also their links in the genealogy of the Messiah.

From all this it would seem to be justly inferred that ethnological displacement and extinction must be regarded in many, probably in the majority of cases, not as amounting to a literal extirpation, but only as equivalent to absorption. Such, doubtless, it has been to a great extent with the ancient European Celtæ, notwithstanding the distinct historical evidence we possess of the utter extermination of whole tribes both of Britons and Gauls by the merciless sword of the intruding Roman; and such also is being the case to some extent with the aboriginal Red Indians of the New World. It is impossible to travel in the far west of the American continent, on the borders of the Indian territories, or to visit the reserves where the remnants of Indian tribes displaced by

us in Canada and the States, linger on in passive process of extinction, without perceiving that they are disappearing as a race, in part at least, by the same process by which the German, the Swede, the Irish, or the Frenchman, on emigrating to the Anglo-Saxonized States of America, becomes in a generation or two amalgamated with the general stock.

This idea of the absorption of the Indian into the Anglo-American race will not, I am aware, meet with a ready acceptance, even from those who dwell where its traces are most perceptible; but, fully to appreciate its extent, we must endeavour to follow down the course of events by which the continent has been transferred to the descendants of its European colonists. At every fresh stage of colonization or of pioneering into the wild West, the work has necessarily been accomplished by the hardy youths, or the hunters and trappers of the clearing. Rarely, indeed, did they carry with them wives or daughters; but where they found a home amid savage-haunted wilds they took to themselves wives of the daughters of the soil. To this mingling of blood, in its least favourable aspects, the prejudices of the Indian presented little obstacle. Henry, in his narrative of travel among the Cristineaux on Lake Winipagon, in 1760, after describing the dress and allurements of the female Cristineaux, adds:—"One of the chiefs assured me that the children borne by their women to Europeans were bolder warriors and better hunters than themselves."[1] This idea frequently recurs in various forms. The patient hardihood of the half-breed lumberers and trappers is recognised equally in Canada and the Hudson's Bay Territory, and experience seems to have suggested the same idea relative to the Esquimaux. Dr. Kane remarks that the "half-breeds of the coast rival the Esquimaux in their powers of endurance."[2] But whatever be the characteristic of the Indian half-breed, the fact is unquestionable that all along the widening outskirts of the newer clearings, and wherever an outlying trading or hunting post is established, we find a fringe of half-breed population marking the transitional border-land which is passing away from its aboriginal claimants. I was particularly struck with this during a brief residence at the Sault Ste. Marie, and in the immediate vicinity of one of the Hudson's Bay forts, in the summer of 1855. When on my way to Lake Superior I had

[1] Henry's *Travels and Adventures in Canada and the Indian Territories*, 1760-1776; p. 249.

[2] Kane's *Arctic Explorations*, 1853-55, vol. i. p. 246.

passed on the River Ste. Marie a large body of christianized Indians assembling from various points both of the American and the Hudson's Bay territories, on one of the large islands in the River Ste. Marie; and while waiting at the Sault a considerable body of them returned, passing up in their canoes. Having entered into conversation with an intelligent American Methodist missionary, who accompanied them, I questioned him as to the amount of intermarriage or intercourse that took place between the Indians and the whites, and its probable effects in producing a permanent new type resulting from the mixture of the two very dissimilar races. His reply was: "Look about you at this moment; comparatively few of these onlookers have not Indian blood in their veins;" and such I discovered to be the case, as my eye grew more familiar with its traces. At all the white settlements near those of the Indians, the evidence of admixture is abundant, from the pure half-breed to the slightly marked remoter descendant of Indian maternity, discoverable only by the straight black hair, and a singular watery glaze in the eye, not unlike that of the English gipsy. There they are to be seen, not only as fishers, trappers, and lumberers, but engaged on equal terms with the whites in the trade and business of the place. In this condition the population of all the frontier settlements exists; and while, as new settlers come in, and the uncivilized Indians retire into the forest, the mixed element disappears, it does so purely by absorption. The traces of Indian maternity are gradually effaced by the numerical preponderance of the European; but, nevertheless, the native element is there, even when the faint traces of its physical manifestations elude all but the observant and well-practised eye.

Nor are such traces confined to frontier settlements. I have recognised the semi-Indian features in the gay assemblies at a Canadian Governor-General's receptions, in the halls of the Legislature, among the undergraduates of Canadian universities, and mingling in selectest social circles. And this is what has been going on in every new American settlement for upwards of three centuries. In New England, for example, after the desolating war of 1637, which resulted in the extinction of the Pequot tribe, Winthrop thus summarily records the policy of the victors: "We sent the male children to Bermuda, by Mr. William Pierce, and the women and maid children are dispersed about in the towns."

Two diverse processes are apparent in such intermixture. Where the half-breed children remain with their Indian mother,

they grow up in the habits of the aborigines, and, intermingling with the pure-blood Indians, are re-absorbed into the native stock. But when, on the contrary, they win the regard of their white father, the opposite is the case; and this occurs more frequently with the Spanish and French than with British colonists. In Lower Canada, half-breeds, and men and women of partial Indian blood, are constantly met with in all ranks of life; and the traces of Indian blood may be detected, in the hair, the eye, the high cheek-bone, and the peculiar mouth, as well as in certain traits of Indian character, where the physical indications are too slight to be discerned by a casual observer. Dr. Tschudi, after describing the minute classification of half-castes in Peru, adds: "The white Creole women of Lima have a peculiar quickness in detecting a person of half-caste at the very first glance, and to the less practised observer they communicate their discoveries in this way with an air of triumph; for they have the very pardonable weakness of priding themselves on the purity of their European descent." There, however, as well as in Mexico, the pride of caste interferes in no degree with the equality of the civilized half-breed; and while many of the varieties of mixed blood are regarded as inferior to their progenitors, the Mestizo, or offspring of a white father and Indian mother, is believed to inherit many of the best qualities of both. Like the Canadian half-breed, however, he is mild and irresolute, capable of considerable endurance, but little adapted for an independent course of action. Nevertheless, among Canadian half-breeds there are men at the bar and in the Legislature; in the Church; in the medical profession; holding rank in the army; and engaged in active trade and commerce. No distinctive traits separate them, to the ordinary observer, from the general community of which they form a part; and they will disappear after a generation or two, simply by the numerical superiority of those of European descent.

With the civilized and christianized Indians it is otherwise. Kept apart on their Indian reserves, and guarded, in a state of pupilage, from the cupidity as well as the stimulating competition of the white settler, the benevolent intentions of their guardians are defeated by the very process designed for their protection. The Indian, under such a system, can only step forth to an equality with the White by forfeiting his claims to the Indian reserves, which he may till, but cannot sell; and it is unquestionable that, congregated together in such settlements, under the most careful

superintendence, the Indian, robbed of the wild virtues of the savage hunter, acquires only the vices and the diseases of the white man; and as Sir Francis Bond Head remarks, in one of the strangest official documents ever penned by a colonial governor: "As regards their women, it is impossible for any accurate observer to refrain from remarking that civilisation, in spite of the pure, honest, and unremitting zeal of our missionaries, by some accursed process, has blanched their babies' faces."[1]

The following statistics, from an "Occasional Paper on the Columbian Mission," issued under the authority of the Bishop of British Columbia, in 1860, sufficiently illustrate the circumstances under which a modern British colony frequently originates. The Indians in Vancouver's Island and British Columbia are stated to amount to 75,000, and the missionary at Port-Douglas makes this return of settlers in his district:—

Citizens of United States,	73
Chinese,	37
British subjects,	35
Mexicans and Spaniards,	29
French and Italians,	16
Coloured men,	8
Central Europe,	4
Northern Europe,	4
	206

Of these, the sexes are thus:—

Males,	204
Females,	2

The admixture of blood with the native population, consequent on such a disproportion of the sexes, is inevitable; and yet, long before the colony of Columbia is as old as New England, the descendants of this varied admixture of nationalities will doubtless talk as freely of "Anglo-Saxon" rights and duties as any of the older Anglo-American settlements.

Such is the process that has been going on, from generation to generation, since the European colonist began his encroachments on the territory of the American aborigines. Everywhere colonisation begins with a migration chiefly composed of males; and the consequent preponderance of females in the countries from whence

[1] "Memorandum on the Aborigines of North America," addressed by Sir F. B. Head to Lord Glenelg, 20th Nov. 1836.

they go forth gives a novel character to their ancient settlements. Not only is this observable in European sources of emigration, but it already distinguishes the Eastern from the Western American States. From the "Abstract of the United States Census of 1860," it appears that the females in Massachusetts outnumbered the males by more than 37,000; while Indiana, on the contrary, shows an excess of 48,000 males. But the latter state borders on the Indian country, where the native women help to restore an equality in the proportion of the sexes; and the simplicity of border life removes the chief impediments to the intermixture of the races. Intermarriage of some sort is inevitable between the native race and the intruding whites, under such circumstances; and the same process goes on there now which has been in operation from the commencement of European colonisation of the continent. Hardy bands of pioneer adventurers, or the solitary hunter and trapper, wandered forth to brave the dangers of the savage-haunted forests; and found an Indian bride the fittest mate for the wilderness. Of the mixed offspring, a considerable portion grew up under the care of the Indian mother, aspired to the honours of the tribe, and were involved in its fate. But also a portion adhered to the fortunes of the white father, shared with him the vicissitudes of border life, and partook of the advantages which gradually gathered round the settled community. As the border land slowly receded into the farther west, Time wrought the while his gradual change; and long ere the little cluster of primitive log-huts had grown up into the city and capital of a state, the traces of Indian blood had been lost sight of. The intermixture, however, had taken place; a certain percentage of Indian blood was there, and that in sufficient amount to have exercised some influence in the development of characteristics which already distinguish the native Anglo-American from the old insular stock.

But nowhere is the remarkable process of intermixture, absorption, and repulsion seen on so great a scale as at the Red River settlement, on the river of that name, which flows into Lake Winnipeg, along with that more recently formed on the Assinaboine river. The former settlement is situated along the banks of the river for about fifty miles, and extends back from the water, according to the terms of the original grant ceded by the Indians, as far as a man can be distinguished from a horse on a clear day. Begun in 1811, under the auspices of Lord Selkirk, and afterwards taken under the protection of the Hudson's Bay Company, the Red

River settlement now numbers about two thousand whites, chiefly occupied in farming or in the service of the Company. The original settlers were from the Orkney Islands, but they have been subsequently increased by English, Scotch, and French Canadians. There, however, as well as at the remoter forts and trading-posts of the Hudson's Bay Company, the white immigration consisted chiefly of young men; and the result has been, not only the growth of a half-breed population greatly outnumbering the whites, but the formation of a tribe of Halfbreeds, who keep themselves distinct in manners, habits, and allegiance, alike from the Indians and the Whites.

This rise of an independent half-breed tribe is one of the most remarkable phenomena connected with the grand ethnological experiment which has been in progress on the North American continent for the last three centuries. The number of the settled population, either half-breed, or more or less of Indian blood, in Red River and the surrounding settlements, is now, according to returns I have obtained,[1] about 7200, of whom 6500 are in the Red River settlement. A noticeable difference is observable according to their white paternity. The French half-breeds are more lively and frank in their bearing, but also less prone to settle down to the drudgery of farming, or other routine duties of civilized life, than those chiefly of Scottish descent. But in a border settlement, where the principal trade is still in peltries, the hunter life presents many attractions even for the white colonist; and the half-breeds are exposed to temptations unknown in older settlements. They are a large and robust race, with greater powers of endurance than any of the native tribes exhibit. With the reserved and unimpressible manner of the Indian, they are nevertheless capable of displaying much vivacity when interested or excited. They retain the coarse, straight black hair, and the full mouth, as the most persistent features derived from their Indian maternity; but, even in the first generation, the dark eye has a soft and pleasing aspect compared with that of the pure Indian. As a general rule, the families descended from such mixed parentage are larger than those of white parents; but the results of this are in some degree counteracted by the prevalence of consumption among them. In 1855, it was my good fortune to see an interesting example of the different types of the pure and hybrid Indian. At La Point,

[1] Returns in reply to printed queries about the Indian and half-breed population, circulated by the author in Red River settlement and elsewhere.

near the head of Lake Superior, we met with Beshekee, the head chief of the Leech Lake Chippewas, already referred to, a grand old specimen of the wild pagan Indian, seamed with the lines of age and the scars of many a forest adventure. He boasted of the scalps he had taken, showed the collar of claws of the grizzly bear, and other trophies won by him in the chase; and spoke, with the unimpressible indifference of a true Indian, of the civilisation of the European intruders, as a thing good enough for the white man, but in which neither he nor his people had any interest. He was accompanied by his son, a debased, dissipated-looking Indian, wrapped in a dirty blanket; and betraying only the degradation of the savage when robbed of the wild virtues of the forest-hunter, without replacing them by anything but the vices of civilisation. The group was completed by a grandson of the old chief, an intelligent, civilized half-breed, who spoke both French and English with fluency, and acted as interpreter during the interview. In this case, however, the grandson was smaller, and altogether inferior in physical characteristics to the aged forest-bred chief, who was a fine specimen of the Indian, untainted by intercourse with Europeans.

In the Red River settlements where the intermarriage has been invariably between a white husband and an Indian wife, the Indians are chiefly Plain Crees. Some have also belonged to the Swampies, another branch of the Crees, and also to the Blackfeet and Chippewas. But on the Manitoulin Islands, in Lake Huron, a few cases of marriage between an Indian husband and white wife have occurred. In every case the advantage to the Indian husband has been very marked. The children of such marriages are invariably superior to other half-breeds, but this may be traceable to the moral, quite as much as to the physical difference in their favour.[1] The greater number of the half-breeds on Lakes Huron and Superior are of French paternity, while their Indian mothers are chiefly Chippewa or Ottawa; and the few examples of Indian paternity belong to the same tribes.

But the civilized half-breed population of the Red River settlements occupies a peculiar position, and must not be confounded either with the remarkable tribe of Half breeds, or with Indians of mixed blood in the villages on their Canadian reserves. Remote as that settlement has hitherto been from other centres of colonization; and tending, from its peculiar circumstances, rather to attract

[1] Answers to Queries, by Rev. Dr. O'Meara, long resident missionary among the Indians of the Manitoulin Islands.

the Canadian voyageur, or the young adventurer, than the married settler, the inevitable tendency has been towards intermarriage, and the growth of a mixed population. Much property is now accordingly possessed by those of mixed blood. Their young men have, in some cases, been sent to the Colleges of Canada, and, after creditably distinguishing themselves there, have returned to bear their part in advancing the progress of the settlement. The result of this is already apparent in an increasing refinement, and a growing desire for the removal of every trace of their relation to the wild Indian tribes, or the Halfbreeds who rival them in the arts of savage life. Professor Hind remarks, in his "Report on the Exploration of the Country between Lake Superior and the Red River Settlement,"—"The term *native*, distinguishing the halfbreeds from the European and Canadian element, on the one hand, and the Indian on the other, appears to be desired by many of the better class, who naturally look upon the term half-breed, as, applied to a race of Christian men, scarcely appropriate."[1]

The venerable Archdeacon Hunter, of Red River, in the replies to queries, with which he has favoured me, says,—in answer to the inquiry, "In what respects do the half-breed Indians differ from the pure Indians as to habits of life, courage, strength, increase of numbers, etc.?"—"They are superior in every respect, both mentally and physically." Again, when asked to "state any facts tending to prove or disprove that the offspring descended from mixed white and Indian blood fails in a few generations," Archdeacon Hunter gives this decided reply, as the result of experience acquired by long residence and intimate intercourse among them as a clergyman of the Roman Catholic Church:—"It does not fail, but, generally speaking, by intermarriages it becomes very difficult to determine whether they are pure whites or half-breeds." Mr. S. J. Dawson, of the Red River Exploring Expedition, also describes the half-breeds as a hardy and vigorous race of men, and frequently with large and healthy families. "I know," he writes, "from my own observation, that the French half-breeds at Red River are a gigantic race as compared with the French Canadians of Lower Canada."

The Halfbreed buffalo-hunters are not to be regarded as at all approximating to the nomade Indians. They belong to the settlement, possess land, and cultivate farms; though their agricultural operations are only such as might be expected, where the inducements to a wandering life are nearly as great as among the pure-

[1] *Report*, 1848, p. 305.

breed Indians, who abandon such work to their squaws or slaves. They are, however, distinct from members of the settled community of mixed blood, who have shared in the domestic training and culture of their white fathers, and adopted European habits. The hunters are now divided into two bands, known by their separate hunting-grounds. Of these, the White Horse Plain Halfbreeds furnished the following returns, according to a census taken in 1849, near the Strayenne River, Dacota territory :—"Six hundred and three carts, seven hundred Halfbreeds, two hundred Indians, six hundred horses, two hundred oxen, four hundred dogs, and one cat." According to Mr. Paul Kane, who joined their buffalo-hunt in the summer of 1845, the half-breed hunters of Red River then numbered altogether 6000, and more recent returns indicate an increase of about 500.

Few subjects of greater interest to the ethnologist can be conceived of than this origination of a numerous and independent tribe of Halfbreeds, partaking of characteristics derived alike from their white fathers and their Indian mothers. They are a hardy race of men, capable of enduring the greatest hardships. They adhere to the Roman Catholic faith; and occasionally a priest accompanies them on their hunting expeditions, in which case mass is celebrated on the prairie. They are at open feud with the Sioux and other Indian tribes, and carry on their warfare much after the fashion of the Indian tribes that have acquired fire-arms and horses; but they give proof of their "Christian" civilisation by taking no scalp-trophies from the battle-field. From about the 15th of June to the end of August, they are abroad on the prairie engaged in their summer hunt. A subsequent autumnal buffalo-hunt engages a smaller portion of their number; and then such as do not depend on winter hunting, and the profits of trapping the fur-bearing animals, return to the settlement. It is complained that they make poor farmers, neglecting their land for the exciting pleasures of the chase. But this is inevitable, where the produce of their buffalo hunts supplies the chief means of carrying on a profitable trade with the Hudson's Bay Company's agents and American traders from St. Paul's. The distant hunt not only consumes the time required for agricultural labour, but it begets habits altogether incompatible with settled industry; and would produce the very same results on any body of white settlers as on this remarkable native population. But in the field, whether preparing for hunting or war, the superiority of the Halfbreeds is strikingly

manifested. They then display a discipline, courage, and self-control, of which the wild Sioux or Blackfeet are altogether incapable; and they accordingly look with undisguised contempt on their Indian foes.

The organization displayed in their hunting expeditions shows a remarkable aptitude for self-government. When fairly started on the hunt, a general council is held, which proceeds to elect a president or leader. A number of captains are then nominated jointly by the leader and council, and each of these appoints a certain number of constables or deputy-officers, whose duty it is to see that the laws of the hunt are carried out, and that the nightly encampment is made with strict attention to the general safety. Guides are also chosen by popular election, who carry flags as their badges of office, and control all arrangements for the camping. The hunt being thus organized, all who have joined it are under military law. No hunter can return home without permission; no gun may be fired when the buffalo country is reached, until the leader has given the word, which lets loose the wild array of hunters on the bewildered herd. The captains and their deputies also superintend the nightly arrangement of the carts in a circle, within which the horses and cattle are picketed; and, in case of property being missed, they can prohibit any member of the hunt from stirring till it is found. Every breach of camp-laws is atoned for by fines. A man who passes the camp-guide of the day, while on duty, subjects himself to a fine of five shillings; and he who ventures to run a buffalo, before the leader has given the signal for the hunt to begin, has to forfeit a penalty of twenty shillings.

Such are the most noticeable characteristics of this singularly interesting race, called into being by the contact of the European with the native tribes of the prairie and forest. With so much of the civilisation which no pure Indian tribe has derived from intercourse with white men, and such admirable organization and prompt recognition of the obligations of law and order, there seems good reason for believing in their capacity for all the higher duties of a settled, industrious community. They already know the use and value of money; nor are they unused to the labours of agriculture, though hitherto this has offered no profits to tempt them to the raising of grain or stock-farming on any adequate scale. In the present condition of the Red River settlement, with its unhealthful element of fur-trading posts, buffalo prairies, and nearly inaccessible markets for farming produce, the Halfbreeds are retained

in that dangerous transitional stage from which all attempts at civilisation among the Indian tribes have derived the chief sources of failure. But they have within themselves elements of resistance to the destructive influences attendant on the transition from the hunter state to the settled life of the farmer and trader, and no race has ever offered stronger claims on the attention of the philanthropist or the statesman. But, under any circumstances, the Halfbreeds of the Red River cannot permanently remain as a distinct race. Already the settlers of mixed blood intermarry freely with the white population, and share with perfect equality in all the rights and privileges of the community. As emigration increases the same results will follow there, as have already happened in all the older settlements, from the New England shores, or the St. Lawrence Gulf, westward to the remotest clearings of young civilisation. The last traces of the red blood will disappear, not by extinction, but by the absorption of the half-breed minority into the new generations of the predominant race. Yet, along with all the changes wrought by climate, institutions, and habits, on the people thus formed to be the inheritors and occupants of the deserted Indian hunting-grounds in the Western Hemisphere, this element will exercise some influence, and help to make them diverse from their European ancestry. On this account, therefore, as well as on others, we want some such term as Euro-american to indicate the new race.

But there is another aspect in the history of the American Indian tribes, in which their extinction is seen to be wrought out by means which we can estimate with very different feelings from those with which we witness their extermination by the mere process of contact with the white settler, or their extirpation by the combined action of his violence and criminal cupidity. The condition of the American tribes and nations to the north of the Mexican centre of a native civilisation, may be described at the period of European discovery as one of unstable equilibrium. We trace the influence of one or two dominant tribes from the St. Lawrence to the Gulf of Mexico; and the rival nations were exposed to such constant and aimless exterminating warfare, that it is more than doubtful if the natural increase of population was then equal to the waste of war. We are accustomed to regard the Western Hemisphere as the natural habitat of its aboriginal children: wherein, as in a world apart, they grew and multiplied, in the enjoyment of all that their simple natures were capable of,

until the intrusion of the white man brought misery and desolation into their midst, and that exterminating process was begun which threatens, ere many more generations shall have passed away, to leave only their grave-mounds to tell of the past existence of the Red Man in the New World. A brief glance at some of the incidents in the history of extinct tribes, will tend to modify this opinion.

The early notices of the first explorers, and the traditions since gathered from surviving nations, tell of many that have utterly passed away, without the malign intervention of European influence. "But language adheres to the soil when the lips which spoke it are resolved into dust. Mountains repeat, and rivers murmur the voices of nations denationalized or extirpated in their own land."[1] By such vestiges extinct nations assert their claims to an inheritance of the past, throughout all the ancient world; and the same evidence tells of former occupants of the New World. The great mountain chain of the Alleghanies, constitutes in this manner the enduring monument of the oldest tribe of the United States of which there is a distinct tradition. The beautiful valleys of the Ohio and its tributaries once teemed with the warriors, and were enlivened by the populous towns and villages of this ancient people. The traditions of the Delawares told that the Alleghans were a strong and mighty nation, reaching to the eastern shores of the Mississippi, when in remote times they came into the Great Valley from the west. But the Iroquois, who had established themselves on the head waters of the chief rivers which have their rise immediately to the south of the great lakes, combined with the Delawares or Lenapé nation to crush the power of that ancient people; and the surviving remnant of the decimated Alleghans was driven down the Mississippi, and their name blotted out from the roll of nations. The very name of the Ohio is of Iroquois origin, and given to the river of the Alleghans by their ruthless conquerors. The Susquehannocks, who are believed to have been of the same ancient lineage, excited the ire of the Iroquois, and were in like manner extirpated; at a later date the Delawares fell under their ban, and the remnant of that proud nation quitting for ever the shores of the noble river which perpetuates their name, retraced their steps into the unknown West. So, in like manner, the Shawnees, Nanticokes, Unamis, Minsi, and Illinois, were vanquished, reduced to the condition of dependent nations, or driven out and exterminated. Settlements of the conquerors were fre-

[1] Palgrave's *Normandy*, vol. i. p. 700.

quently established in the conquered lands; and the only redeeming feature in this savage warfare was their system of absorption, by adopting prisoners rescued from death, and admitting them into the tribes of the conquering nation.

All this was the work of the Indian. As the curtain rises on the aboriginal nations of the forest and the prairie, we find them engaged in this exterminating warfare; and a glance on the map of subsequent centuries, or a reconstruction of the traditionary history of the oldest tribes, tells the same tale of aimless strife, expatriation, and extinction. The history of the nations found in occupation of a wide range of country on the northern and southern shores of the great lakes, including the whole of Upper Canada and Western New York, will most clearly suffice to illustrate this phase of savage life. When Cartier first explored the St. Lawrence, in 1535, he found large Indian settlements at Quebec and on the Island of Montreal, where Champlain, little more than half a century after, met with few or none to oppose his settlement. We can only surmise who the Indians at the period of Cartier's arrival were; but it is most probable that they belonged to the same Wyandot stock, who were then withdrawing into the western parts of Upper Canada to escape the fury of the Iroquois, after they had nearly desolated the Island of Montreal. At the era of Champlain's visit, and throughout the entire period of French occupation, the country to the south of the St. Lawrence, and along the whole southern shores of Lake Ontario, was occupied by nations of the Iroquois confederacy, whose uncompromising hostility to the French materially contributed to confine their colonies to the limits of Lower Canada. The country immediately to the westward of the river Ottawa, and along the northern shore of Lake Ontario, was found unoccupied when first explored by Champlain; but it was marked with abundant traces of cultivation, and of recent occupation by tribes who had retreated westward from the violence of the Iroquois. The region to the north of the Wyandot or Huron territory, and the islands and northern shores of Lake Huron, were in the occupation of the Mississagas, the Ottawas, the Nipissings, and other Algonquin nations, who, though belonging to a distinct stock, are repeatedly found in alliance with the Hurons against their common Iroquois foe, and to some extent shared their fate. The Hurons, on the contrary, and all the nations lying between them and the Iroquois country, appear to have belonged to the same stock with the confederate nations, by whom they were pursued with such un-

compromising hostility till their once populous regions were abandoned to the wild beasts of the forest.

At the period when the Huron tribes became the special objects of missionary zeal by the Jesuit Fathers, in the seventeenth century, they were established along the great bay, once populous on all its shores with that extinct nation whose name alone survives in the Lake of the Hurons. The region lying around Lake Simcoe, and Georgian Bay, is marked on every favourable site with the traces of their agricultural industry, and crowded with their graves. They presented traits of superiority to the nations of the Algonquin stock; and equalled in fierce daring, and all the wild virtues of the savage warrior, the Iroquois, by whom they were unrelentingly exterminated. Father Sagard estimated the population of the limited region occupied by the four Huron tribes at the close of their national history, at between thirty and forty thousand souls. But to the south-west lay the villages of the Tiontonones, or Petuns, another nation of the same stock, also a populous and industrious agricultural community; and beyond this, in the territory embracing the beautiful valley and the great falls of the Niagara River, where are now the sites of the finest orchards of Canada, and some of the most fruitful counties of the State of New York, a nation belonging to the same Huron-Iroquois family was found by the first French missionary explorers, in 1626. By the Hurons they were designated the Attiwendaronk, expressive of the mere dialectic difference between the languages of the two;[1] but from the French they received the name of the Neutral Nation, from the friendly relations they maintained with both parties during the great struggle between the Iroquois and the allied Huron and Algonquin nations. At the close of their history their population was estimated at twelve thousand souls; but a position of neutrality between hostile rivals was rendered all the more difficult by the ties of consanguinity: though this appears to have been also shared by the Eries who occupied the broad fertile regions along the southern shores of the great lake which bears their name.

The fate of the Attiwendaronks and the Eries is certain, but the history of both is obscure, for they lay beyond the reach of the French traders and missionaries. In the earlier half of the seventeenth century the Jesuit Fathers planted their stations throughout

[1] By this name, according to Brebœuf, the Hurons signified that they were a "*people of a language a little different.*" They applied that of Akwanake as the general name of nations speaking languages unintelligible to them.

the Huron country, amid populous walled villages and cultivated fields, and reckoned the warriors of the tribes by thousands. In 1626, Father Joseph de la Roche d'Allyon penetrated into the country of the Neutral Nation, and sought to discover the Niagara at its junction with Lake Ontario. After a journey of five days through the unbroken forest which lay between the Tiontonones, and the Attiwendaronks, he reached the first settlement of the latter, and passed through six towns before arriving at that of the chief Sachem. Twenty-two other towns and villages were embraced within his jurisdiction; and tobacco was largely cultivated along with maize and beans. The country of the Eries was greatly more extensive, and probably not less populous. But within less than thirty years from this mission of Father de la Roche, the whole region occupied by those nations, from the Georgian Bay to the southern limits of the Eries, far beyond the shores of the lake which perpetuates their name, was a silent desert. Tradition points to the kindling of the council-fire of peace among the former nation, before the organization of the Iroquois confederacy; and to the artistic skill of the Eries are ascribed several interesting remains of aboriginal art, among which the pictorial inscription on Cuningham's Island in Lake Erie is described as by far the most elaborate and well-sculptured work of its class hitherto found on the continent.[1] But they perished by the violence of kindred nations before the French or English could establish intercourse with either. In the French maps of the middle of the seventeenth century the very existence of Lake Erie is unknown; and the first of the Jesuit missionaries had scarcely penetrated to its shores, when the ancient nation whose name it preserves was swept away. Within a year or two of their destruction the Neutral Nation experienced the same fate at the hands of the Mohawks under the leadership of Shorikowani, a famous chief of that nation; and the Attiwendaronks utterly disappeared from the Valley of Niagara. Charlevoix assigns the year 1655 as the date of their extermination. Their council-fire was extinguished; their name was blotted out; and the few survivors were subsequently found by one of the French missionaries, living in degrading serfdom in the villages of their conquerors.

All this was the result of conflict among native tribes, and so entirely uninfluenced by the white man that it is with difficulty we can recover some trustworthy glimpses of the Eries or the

[1] *History of the Indian Tribes*, vol. ii. p. 78, plates xli. xlii.

Neuters from the notes of one or two missionaries, whose zeal for the propagation of the faith carried them into the country of those extinct nations, long before the enterprise of the *coureurs des bois* had led them to penetrate so far. It reveals to us glimpses of what had been transpiring in unrecorded centuries throughout the vast forests and prairies of the American continent; and may help to reconcile us to the fate of the Iroquois by whom such widespread desolation was wrought. Their remarkable confederacy was broken up by the adherence of the Mohawks to the British side, when the colonists rose in arms against the mother country. The beautiful Mohawk Valley which was once their home, is now crowded with towns and villages, and interlaced by railways and canals; but the remnant of the once powerful Mohawk tribe, with a small band of the Senecas, amounting together to about seventeen hundred souls, have found a home in the country they depopulated two centuries before. "I have been told," says Colden, "by old men in New England, who remembered the time when the Mohawks made war on their Indians, that as soon as a single Mohawk was discovered in their country, their Indians raised a cry from hill to hill, A Mohawk! a Mohawk! upon which they fled like sheep before wolves, without attempting to make the least resistance." The traditional terror of their name still survives, though they have been settled for generations peaceably on Canadian reserves, granted by the British Government to them, along with other loyalist refugees from the revolted colonies. The cry of a Mohawk still fills with dread the lodges of the Algonquin Indians in the Canadian settlements; and they have been repeatedly known to desert their villages on Couchiching, Chemong, and Rice Lakes, and to camp out on islands in the lakes, from the mere rumour of a Mohawk having been seen in the vicinity.

The pure-blood Mohawks still exhibit traces of the superiority which once pertained to all the members of the Iroquois league; and the same traits are discernible in other survivors of the confederate nations. The Onondagas, who claimed to be true autochthones, alone of all the Six Nations retain a hold on their native spot of earth, and still dwell in the beautiful and secluded valley of Onondaga, with sufficient territory for the maintenance of the surviving remnant. But Mohawks and Onondagas alike betray, in the assemblies of the tribes, many traces of mixed blood, as well as of diminishing numbers, and the same fact is manifest in the representatives of the other nations. Of the Oneidas, a portion

lingers on their ancient site, but the main body of the survivors are scattered: one band in Canada, and another and larger one in Wisconsin. The Senecas and Tuscaroras have their few living representatives near the Niagara river, on a portion of the land which their forefathers wrested from the Eries; and even the Cayugas, the least fortunate among those unfortunate inheritors of a great name, have found shelter for a little handful of their survivors on the Seneca reserves in western New York.

Such is the history of the aboriginal population which, in the seventeenth century, occupied the valley of the St. Lawrence, and stretched away on either bank and along the shores of the great lakes westward to Lake Huron and St. Clair. La Houtan estimated the Iroquois, when first known to Europeans, at seventy thousand; at the present time their numbers in Canada and the States do not altogether exceed seven thousand. They have passed the most critical stage in the collision between savage and civilized man; and, settled on their little farms remote from the populous centres of trade and commerce, they are improving both socially and morally. Nevertheless, kept apart in detached communities in a state of pupilage, and forced into constant intermarriage, their fate is inevitable. Better far would it be for them to accept the destiny of the civilized half-breed, and mingle on even terms with settlers, many of whom have yielded up a nationality not less proud than theirs, and forsaken the homes and the graves of their fathers to share the fortunes of the New World's heirs. It is as impossible for the civilized Indian to live in a community, yet not of it, as for any other of the nationalities whose members merge into the nation with whom their lot is cast. By such a process the last visible remnants of the famous Iroquois league would indeed disappear, absorbed, like all other foreign nationalities, into the new leagues which growing empires are forming in the West. But each survivor of the old Indian confederacy would be the gainer by the abandonment of what is worse than an empty name; while the Euromerican race would take once more into its veins the red blood of the ancient and haughty aristocracy of the forest.

The second volume of the *Archæologia Americana* contains a synopsis prepared by Gallatin, of the Indian tribes of the continent to the east of the Rocky Mountains, and of those in the British and Russian possessions in North America, which may be said to constitute the true basis of native American ethnology. Its value has been fully recognised by subsequent writers, and reference has

already been made to it in previous pages. To him we owe the determination of elements of philological affinity by which we classify the great families or stocks of the Algonquin-Lenapé and the Iroquois, occupying at one time the whole region to the east of the Mississippi, from the fifty-second to the thirty-sixth degree of north latitude. But to the south of this lies a country in which Gallatin recognised the existence of at least three essentially distinct languages of extensive use: the Catawba, the Cherokee, and that which he assumed to include in a common origin, both the Muskhogee and the Choctaw. But besides those, six well-ascertained languages of smaller tribes, including those of the Uchees and the Natchez, appear to demand separate recognition. Their region differs essentially from those over which the Algonquin and Iroquois war-parties ranged at will. It is broken up by broad river-channels, and intersected by impenetrable swamps; and has thus afforded refuge for the remnants of conquered tribes, and for the preservation of distinct languages among small bands of refugees.

The Cherokees were the first settlers, as a comparatively civilized agricultural nation, under very peculiar circumstances. In their predatory inroads they carried off slaves from Carolina; and speedily recognising the advantages derived from enforced service, they gradually settled down in the remarkable condition of a civilized nation of Red Indian slaveholders. In 1825, they numbered 13,783, and held 1277 slaves of African descent. But the fact that at the same time they possessed 2923 ploughs, suffices to prove that agricultural labour must be carried on to a great extent by other than the slave population. Meanwhile the admixture of white blood has largely affected the dominant race. The true test of equality of races is when the civilized Indian marries a white woman, and this has already taken place to some extent among the Cherokees. The census of 1825 included, among the numbers of that nation, sixty-eight Cherokee men married to white women, and one hundred and forty-seven white men married to Cherokee women. This alone, exclusive of all previous hybrid elements, must rapidly tend to efface the predominant characteristics of Indian blood. When the census was taken, in 1852, the Cherokees numbered 17,530; and the commissioner remarked in reference to their growing numbers "A visible increase is discernible, especially among the half-breeds.' But they view with extreme jealousy the inquisitorial visits of the statist, and yield all such information very reluctantly, so that later returns do not admit of comparison with the older census.

In so far as the employment of the African race as slaves is to be regarded as an evidence of the civilisation of the Red Indian, it is by no means confined to the Cherokees. Mr. Lewis H. Morgan writes me thus: "I have visited all the emigrant Indian nations in Kansas and Nebraska, with two or three exceptions. I saw instances among the Shawnees and Delawares, and the Wyandots in Kansas, where white men who had married half-breed Indian women were living genteelly among them, and had slaves to cultivate their land; and also instances where half-breed Indians had married white wives and lived in good style." Unhappily the revolutionists of the Southern States involved the Indians in their struggle for independence. The *Texan News* of April 27, 1861, reports the contents of a letter from the Indian Nations, giving assurances of the friendly reception of commissioners of the State Convention by the Choctaws, Chickasaws, Cherokees, Seminoles, and Creeks. "All the tribes," it added, "are to hold a general council on the 8th of May. These tribes are slaveholders, and are for secession and the Southern Confederacy. The Chickasaws wished to secede at once; but the Cherokees desire to wait until the return of a delegation they have sent to Washington to see about their funds held in trust by the United States Treasury." But meanwhile the editor of the *Kansas News* adds, in proof of the soundness of the worldly-wise Cherokees, notwithstanding their prudent desire to ascertain the safety of their funds before committing themselves to secession: "The Cherokees have cleared out the abolition emissaries among them. Parson Jones, the secretary of Ross their chief, and an abolition agent, has been in danger of his life. He will have to leave the country." A subsequent Report on Indian affairs places the defection of the Cherokees, Chickasaws, and Choctaws beyond doubt; but in the most recent one, issued during the past year, they are represented as divided in council, reduced in numbers, their lands wasted by fire and sword, and a miserable remnant of 8000 "loyal Cherokees" dependent for subsistence on the Indian department. This was the inevitable result of their becoming involved in such a conflict; but even amid this hopeless ruin of the most progressive native civilisation, we may unhesitatingly accept the revolutionary convention of the Chickasaws, Choctaws, and other slaveholding tribes, and the summary clearing out of Parson Jones and the abolitionists by the more cautious Cherokees, as evidence that the southern Indian nations were not greatly behind their white neighbours in the march of civilisation.

In the first volume of the *History of the Indian Tribes of the United States*, a complete census is given from data furnished by the Indian department at Washington, but no statistical information appears to have been collected relative to the extent of mixed blood. In 1789, the total number of Indians within the territory of the United States was estimated to amount to 76,000; but since then, while many semi-civilized and frontier tribes have diminished in numbers, or even become extinct, the acquisition of new territories has brought large accessions to the United States Indians. In 1825, when the census of the Cherokees already referred to was taken, the aggregate of the whole number of Indians within the geographical boundaries of the Union was stated at 129,366; and in 1850, owing to the acquisition of California, Texas, New Mexico, etc., it had risen to 400,764.

Mr. Lewis H. Morgan, the historian of the Iroquois, who has devoted much attention to the condition of the Indian tribes, and has enjoyed many opportunities of personal observation, thus writes me in reply to queries relative to the amount of mixed blood traceable among the Indians of the United States: "I doubt whether there is any statistical information upon the subject in the possession of the Government. I know of none. Actual observation would throw some light upon the question; but even this would be met with the difficulty that some of our native races of pure blood are darker than others. The Kaws of Kansas are unmixed. They are also prairie Indians, and very dark-skinned, nearly as much so as the negro. The Sauks or Foxes are adulterated somewhat, yet I have seen some of them as dark as the Kaws. The Pawnees of the upper Missouri are also prairie Indians, and the pure-bloods are nearly as dark-skinned as the Kaws. I have seen their bare backs many times, and examined their skin closely. It is slightly mottled, with a bronze colour, and is a truly splendid skin. On the other hand the Sioux, or Dacotas, are much lighter. So are the Chippewas and Potowattomies when pure. But all of these have taken up white blood in past generations, and the rapidity of its dissemination after a few generations needs no proof. I think they have taken up enough, through the traders and frontier men, since 1700, to lighten their colour from one-sixth to one-fourth. The pure-blood Iroquois are light. I have seen them nude to the waist in the dance very many times. Their skin is splendid, of a rich coffee and cream colour. But it must be remembered that all of these are forest tribes except the Dacotas, and even they have

been forced back on the prairies, from Lake Superior and the east side of the Mississippi, since the period of colonization. Indians of the same stock grow much darker on the prairie if far south. I tried, when in Nebraska, to ascertain the number of half-breeds and quarter-breeds around our forts in the Indian territory. The number is large, but I could gain no satisfactory information." The observations thus noted have a very comprehensive bearing on the general question of hybridity; for so far from implying any tendency to deterioration or extinction as the result of an intermixture of the white and red races, they point to such admixture of blood already affecting whole tribes still roaming the forests and the prairies. So much indeed is this the case that the term "pure-breed" is perhaps only partially applicable to any of them, and it may even be a question how far the physical form, as in the features and the shape of the head, have escaped modification by such influences.

Through the aid of officers of the Indian Department of Canada, I have succeeded in obtaining statistical information of a more definite kind relative to some at least of the settled tribes. In Lower Canada, no detailed system of Indian superintendence has been organized, so that information for that portion of the province is much less accessible. The department affords aid to the Indians upon the representation of the priests or other white residents in their neighbourhood; but, in 1856, his Excellency, Sir Edmund Head, appointed a commission to inquire into the best means of securing the future progress and civilisation of the Indian tribes in Canada, and, from their report, supplemented by more recent returns, the following facts relative to the Indians of Lower Canada are derived. The numbers of the settled tribes, at the present date, are nearly as follows:—

Iroquois of the Sault St. Louis,	1510
Iroquois of St. Regis,	772
Indians at the Lake of the Two Mountains, including Iroquois, Nipissings, and Algonquins,	730
Abenakis of St. Francis,	387
Abenakis of Beçancour,	172
Hurons of La Jeune Lorette,	317
Amalicites of Viger,	171
Micmacs of the Restigouche,	473
Montagnais at Point Blue and Chicoutimi,	200
	4732

There are thus upwards of four thousand Indians of various tribes, settled on lands secured to them by the Provincial Govern-

ment, or otherwise brought more or less under the same influences as the white settlers around them. But in some of those bands not a single pure-blood Indian remains. They have all abandoned paganism, and the greater number adhere to the Roman Catholic Church; but their condition varies considerably in different localities. The Iroquois of St. Regis are specially noticeable as having blended some of the healthful elements of European civilisation with the self-reliance and vigour which once rendered them the most formidable enemies of the colonists of Louis XIV. They are now conspicuous among native tribes for their temperate and orderly lives, and the great progress they have made as a settled community. They raise wheat, oats, Indian corn, potatoes, and other agricultural products, to a considerable extent; and when the last census was taken, they possessed 126 cows, 17 oxen, 114 horses, and 250 swine. A considerable number of them are of mixed blood, but they still manifest a predilection for employments more in accordance with the hereditary instincts of forest life. The able-bodied men reluctantly expend the summer months on their farms. They prefer entering on engagements as raftsmen and pilots for the river, or engaging in the service of the Hudson's Bay Company. They appear, however, to have acquired provident habits, along with other virtues of civilisation; and their numbers have increased more rapidly than any other tribe in Canada of late years, notwithstanding a severe mortality in 1832, when 336 persons died of cholera.

In their industrious and provident habits, the Iroquois of St. Regis present a striking contrast to other tribes, such as the Abenakis of Beçancour, whose whole live stock in 1857 consisted of a single horse. The band of Abenakis settled on the river St. Francis, has, however, attained to a higher condition; though some of the evidences of its progress are not productive of the most beneficial results. Its further improvement is reported to have been greatly retarded by divisions and jealousies consequent on the adoption of the Protestant faith by a portion of the tribe, while the remainder hold fast to that of the Roman Catholic Church. They include among their numbers descendants of the once famous Mohegans, and their warlike allies, the Sokokis, but the report of 1858 states that there was not then a single pure-blood Indian surviving. The Rev. J. Maurault, Roman Catholic missionary at St. Francis, remarks :—" Our Indians are, with but very few exceptions, *Métis,* or half-breeds. Here, I do not know one Abenakis of pure

blood. They are nearly all Canadian, German, English, or Scotch half-breeds. The greater part of them are as white as the Canadians, and the dark complexions we see with many are owing, in most cases, to their long voyages, exposed, as they frequently are, for two and three months at a time, to the burning rays of the sun. Many suppose that our Indians are intellectually weak and disqualified for business. This is a great mistake. Certainly, so far as the Abenakis are concerned, they are nearly all keen, subtle, and very intelligent. Let them obtain complete freedom, and this impression will soon disappear. Intercourse with the whites will develop their talents for commerce. No doubt some of them would make an improper use of their liberty, but they would be but few in number. Everywhere, and in all countries, men are to be found weak, purposeless, and unwilling to understand their own interests; but I can certify that the Abenakis generally are superior in intelligence to the Canadians. I have remarked, that nearly all those who have left their native village to go and live elsewhere free, have profited by the change. I know of several who have bought farms in our neighbourhood, and are now living in comfort. Others have emigrated to the United States, where they have almost all prospered, and where several of them have raised themselves to honourable positions. I know one who is practising with success the profession of a doctor. Others have settled in our towns with a view to learn the different trades. There is one at Montreal who is an excellent carpenter; but here we see nothing of the kind. Nevertheless, I observe a large number of young men, clever, intelligent, and gifted with remarkable talents." This experienced observer accordingly urges the emancipation of all at least of the more civilized Indians, from the condition of minors in the eye of the law; feeling assured that if they were placed in competition with the whites, and allowed to hold and dispose of their property, they would be found fully able to maintain their place in the community.

This is remarkable testimony, alike in reference to the intelligence and the enduring vigour of a tribe already so largely affected by intermixture with the whites. But the changes wrought on the descendants of the Hurons, whom the Jesuit missionaries of the seventeenth century guided from their ravaged hunting-grounds around the Georgian Bay to their later settlements on the banks of the river St. Charles, have still more completely effaced all aboriginal traces. The author's disappointment was great on first

visiting the village of La Jeune Lorette for the purpose of seeing the remnant of the warlike Hurons. Their nominal existence there is indeed chiefly due to the hereditary claims which they maintain to their share in the annual division of certain Indian funds. The Commissioners refer to them as a band of Indians "the most advanced in civilisation in the whole of Canada;" but the interest which this is calculated to awaken is diminished by the admission in the same report, that since the migration of this band of the Huron tribe from their ancient territory in Upper Canada "they have, by the intermixture of white blood, so far lost the original purity of race as scarcely to be considered as Indians." They are, moreover, the only people of Indian descent in Canada who have lost nearly all traces of their native language. They speak a French *patois*, and, but for the care of their spiritual guardians, and the pecuniary inducements of the annual Indian grant, they would long since have intermingled and disappeared among the habitans of pure French descent, by whom they are surrounded. Here, then, is an example of the admixture of blood protracted through a period of upwards of two centuries. But so far from this practical experiment of the influence of hybridity furnishing any proof of infertility and inevitable extermination as its result, the numbers of the Hurons of Lorette are found to have considerably increased in the interval of twenty years between 1844, when the Indian census was taken, and the Commissioners' returns for the past year. For all that now appears to the contrary, they seem likely to survive until, as a settlement of French-speaking Canadians on the banks of the St. Charles, they will have to prove by baptismal register, or genealogical records of the tribe, their Indian descent, after all external traces have disappeared.

The Micmacs of Restigouche, numbering less than five hundred in all, including many of mixed blood, are a small though highly-civilized band of the Micmac nation, detached from the main stock, owing to the intersection of their lands by the boundaries of the British provinces. Bands of the same Indian nation occupy various reserves in New Brunswick, and throughout Nova Scotia; and small encampments of them may be met with along the shores of the lower St. Lawrence, industriously engaged in the manufacture of staves, barrel-hoops, axe-handles, and baskets of various kinds. They generally speak English, and manifest unusual shrewdness and sagacity in making a bargain. Attracted on one occasion by

a picturesque group of birch-bark wigwams on the southern shore of the St. Lawrence, below the Isle of Orleans, I landed for the purpose of sketching; and, entering into conversation with the group of Micmac Indians, I was amused to find myself presently involved in a discussion as to the price of staves and hoops, the fluctuations of the market, and the hard bargains driven with them by the traders of Quebec; all conducted with an acuteness that might have done credit to a disciple of Adam Smith or Ricardo. Nevertheless, when at parting I ventured on the improper liberty, according to Indian ideas, of asking the name of the leader of the party, with whom the conversation had been chiefly carried on, all his prejudices reappeared. He was once more the native of the wigwam; and I was given plainly to understand that I had encroached on the courtesies of friendly intercourse, and attempted to take advantage of him. A small purchase sufficed, however, to restore amity between us. He appeared to be a full-blood Indian. His figure was muscular and well-proportioned, and his skin presented the strongly-marked red colour, which has repeatedly attracted my attention in pure-blood Micmacs.

Such is the condition of the Indians occupying lands in Lower Canada. But besides those enumerated, various unsettled tribes roam about on the Lower St. Lawrence, small bands of which, including a considerable number of half-breeds, have settled at different stations, and been partially brought under the influence of civilisation, chiefly by the Roman Catholic missionaries. The greater number, however, are wild forest and hunter tribes, of whom some knowledge was formerly gained at the annual gatherings for distribution of presents; but since that practice was abandoned, they rarely come within the range of any civilized observers, excepting those connected with the Hudson's Bay Company. Different tracts of land have been set apart for the Montagnars, on the Peribonka river, on the Metabetchouan, near the Lake St. John, and on the St. Lawrence, from the River de Vases to the Des Outardes. But a large proportion of the Montagnars are still nomadic, and are even found in deadly hostility to the Esquimaux on the shores of James Bay. Of the wild tribes lying to the north and east of the Lower Canadian clearings, comparatively little is known. Among those may be classed the Têtes de Boule, the Algonquins of Three Rivers, and the Nipissings, Algonquins, and Ottawas, who wander uncontrolled near the head-waters of the Ottawa river. The Mistassins and Naskapees, on the Lower St.

Lawrence, are mostly in the same nomade condition. The latter belong to the Montagnars stock, and have been estimated at 2500, of whom fully 1500 are still wild pagans. They worship the sun and moon, or Manitous who are supposed to have their abode there. They devote to both of these deities parts of every animal slain, and annually offer up the sacrifice of the white dog. In their mythology and superstitious rites, the wild Naskapees reveal traces of the same Sabian worship which, under many varying and degraded forms, constitutes a link seeming to connect the savage tribes of North America with ancient native centres of civilisation both in Mexico and Peru.

It is not a little strange to find such pagan rites perpetuated among nomades still wandering around the outskirts of settlements occupied by the descendants of colonists, who, upwards of three centuries ago, transplanted to the shores of the St. Lawrence the arts and laws of the most civilized nation of Europe. The regions thus occupied by savage tribes are annually coasted by the richly-laden merchant fleets of Britain; and the ocean steamers have now brought within a few days' sail of Europe those outcast descendants of the aboriginal owners of the soil. But they experience no benefit from the change. The Mistassins and Naskapees exhibit all the characteristics, and some of the most forbidding traits, of the Indian savage. They are clothed in furs and deer-skins, their only weapons are the bow and arrow, and they depend wholly on the bow and drill for procuring fire.

Yet the wild tribes are unquestionably better off than some who wander in a partially civilized condition on lands allotted to them on the Lower St. Lawrence. Of the Montagnars, the Indian Commissioners remark in their report of 1858: "Where uncorrupted by intercourse with unprincipled traders, they were remarkable for their honesty; and even now it is but very seldom that they break their word, or wilfully violate engagements which they have entered into. There are but few half-breeds among them. They are diminishing rapidly, upwards of three hundred having died within ten years, one half of whom have fallen victims to starvation." Fever and small-pox have from time to time committed terrible ravages among them; but more fatal though less noted effects result from the destruction of their game, and the great injury to their fisheries, effected by the lumberers and white settlers. Fearful tales of cannibalism are whispered; and I have been told of instances brought under the notice of missionaries in the lower

province, in which they entertained no doubt that, in the privations incident to the long and severe winters of that region, the wretched natives have only escaped starvation by the most frightful means to which imagination can conceive a parent resort. It seems indeed unquestionable that the privations of the Indians on the Lower St. Lawrence are frequently fully as great as those of the Esquimaux within the Arctic circle; while the resources available for them are more uncertain, and subject to greater diminution by the encroachments of the European.

The numbers of the unsettled tribes of Lower Canada within reach of direct observation and intercourse amount to about 3000, to which must be added the unascertained numbers of the wild tribes. Altogether there cannot be less than 10,000 Indians still left in the lower province; and of these it is obvious that, as fast as they are brought directly into contact with the civilisation and the religious teaching of their European supplanters, they gradually disappear by a variety of processes: of which the only one it is possible to dwell upon without many painful, though unavailing regrets, is that by which, as in the case of the Hurons of Lorette, we see the descendants of older tribes gradually absorbed into the predominant race, as the waters of the St. Lawrence merge into those of the Atlantic Ocean.

In Upper Canada a well-organized system of superintendence has been long maintained over the settled tribes; and a superintendent is also appointed to take oversight alike of the bands in occupation of reserves on the Great Manitoulin Island, and of the wild Indians who have taken refuge on the numerous islands of Lake Huron or along its northern shores. Until the abandonment of the practice of distributing presents to the Indian tribes, the Great Manitoulin Island was annually the scene of an assemblage, not only of Indians belonging to nearly all the tribes of British North America, but also of many from the United States. No beneficial results, however, appeared to accrue from this practice; and, after sufficient notice had been given, the last distribution took place in 1855. At this annual gathering the white traders latterly flocked, like vultures to the battle-field, and the presents, for the most part, passed into their hands in exchange for gaudy trifles, or for the deleterious fire-water. It was wisely judged, therefore, that the money could be more judiciously expended on behalf of the settled tribes. Nevertheless, the practice has not been abandoned without strong manifestations of dissatisfaction on the part of many;

and it is not uncommon for those who have dealings with tribes lying beyond the influence of the Indian superintendents, to find this referred to as a breach of faith, which makes them receive with suspicion any attempts at negotiation. Statements probably loosely made by Government officers or interpreters, circulated among the tribes as a perpetual pledge guaranteed by the honour of the British Crown; and their feelings have repeatedly found expression in some such terms as these: "The Indians of the forests and the prairies were promised the annual renewal of those presents as long as the sun shone, water flowed, and trees grew. The sun still shines upon us, the rivers flow on, and we see the trees renew their leaves, but we no longer receive anything from our great mother beyond the sea." This annual distribution brought under the notice of the officers of the Indian Department representatives of many tribes only now to be met with in the far West; but encouragement has been held out to the broken tribes and scattered bands of Western Canada to settle on the Manitoulin Islands; and all who have done so are under the oversight of a resident superintendent, who also visits from time to time the tribes scattered along the neighbouring mainland and the north shore of Lake Superior. Three other superintendents are in charge of the tribes and bands occupying various Indian reserves in Upper Canada, including representatives of the three great divisions of Iroquois, Algonquins, and Lenapés. The Indians of Upper Canada and of the islands and north shores of Lakes Huron and Superior, who are all brought more or less directly under the notice of the superintendents, number upwards of 13,000, embracing representatives of the following tribes and nations:—

Indians of the Six Nations, including Mohawks, Oneidas, Onondagas, Cayugas, Senecas, and Tuscaroras,		3,901
Wyandots, or Hurons,		71
Delawares,		652
Algonquins, including:—		
Mississagas,	738	
Potowattomies,	344	
Ottawas,	154	
Chippewas,	2,867	
Chippewas and Ottawas on the Manitoulin Islands,	2,126	
Chippewas on the north shores of Lakes Huron and Superior,	3,274	
		8,603
Total,		13,227

It thus appears that there are still upwards of 23,000 aborigines surviving in Canada, apart from those of the eastern provinces and the great North-western wilds of British North America. The Wyandots, now in occupation of the Huron reserve in the township of Anderdon, obtained confirmation of that portion of the ancient territory of their race at the general partition of lands by the different tribes in 1791; but since then a considerable number of this poor remnant of the lords of the soil have migrated to the Missouri territory in the United States; and the little band that lingers behind, like that at La Jeune Lorette, is fast merging into the predominant race. In 1858, when they numbered sixty-five, the Commissioners remarked of them: "The Indians on this reserve are mostly half-breeds, French and English; very few, if any, are of pure Indian blood. They must be looked upon as among the tribes the most advanced in civilisation in Western Canada. Many of them speak either French or English fluently, and all, almost without exception, have a keen knowledge of their own interest, and would be capable of managing their own affairs." By returns made to me by the Indian Superintendent of their district, they number at present seventy-one, and of these sixty-five are half-breeds, or of mixed blood. In their religious belief they are nearly equally divided between the Roman Catholic and the Methodist creeds. They have no resident missionary of either church among them, but attend the churches, and mingle with the other worshippers of the neighbouring town of Amherstburg, distant about three miles from their settlement. Here, therefore, is a remnant of the Canadian aborigines fully able to enter, on terms of equality, into competition with the white settlers who are acquiring possession of the hunting-grounds of their Huron ancestry; and were it not for the protective system of the Indian Department, they would inevitably merge into the general population, and disappear and be lost, only in so far as they ceased to be distinguished from other members of the civilized community.

The representatives of the once famous confederacy of the Iroquois, the faithful allies of the English, known as the Six Nations, whose ancient territories lay entirely within the State of New York, migrated to Canada at the close of the American War of Independence; and, in 1784, they were settled on a tract of land on the banks of the Grand River, purchased from its Mississaga claimants, and confirmed to them by letters-patent under the Great Seal. At the same time, one of the tribes of the Mohawk nation settled on

the Bay of Quinte under like circumstances; and so recently as 1840 a band of the Oneidas crossed from the United States into Canada, and purchased with their own money a tract of 5400 acres of land on the river Thames, where they are now settled. The Mohawks on the Grand River retain among their prized heirlooms, brought with them from the Valley of the Mohawk, the silver Communion-plate presented to their ancestors by Queen Anne, and bearing the inscription: "A. R. 1711. THE GIFT OF HER MAJESTY, ANN, BY THE GRACE OF GOD, OF GREAT BRITAIN, FRANCE, AND IRELAND, AND OF HER PLANTATIONS IN NORTH AMERICA, QUEEN: TO HER INDIAN CHAPPEL OF THE MOHAWKS." This nation, therefore, had abandoned paganism long before its migration; and since the settlement of the Iroquois tribes in Upper Canada considerable zeal has been manifested by Christian missionaries and teachers in diffusing religious and secular instruction among them. Nevertheless, even now a large majority of the Cayugas, and also part of the Onondagas and Senecas, have not renounced heathenism; and though the Indian reserves on the Grand River have been surrounded and encroached upon by white settlers; and the town of Brantford—named after the celebrated Mohawk chief,—now numbers upwards of 8000 inhabitants, the pagan Iroquois still amount to between five and six hundred.

The Indians of the Six Nations have now been brought into intimate intercourse with the Whites for upwards of two centuries, and for the last seventy years have been placed in such close contact with them that intermixture of the races has been inevitable; though the variations in this respect are remarkable, and the Mohawks have been distinguished from all the others for the readiness with which, from the earliest date of their intercourse with the whites, they have allied themselves with them, and adopted them into their tribes. From returns furnished by the Mohawks of the Bay of Quinte, it appears that they number in all 631, but of these, all but two are reported to be of mixed blood. No specific notice of the changes thus wrought on the Indian tribes had previously been taken; and the novel inquiry for returns of the number of pure-blood Mohawks left in the tribe appears to have startled its surviving members. The required statistics were accordingly accompanied by the following letter addressed to Mr. W. R. Bartlett, the Indian Commissioner, and signed with the names or marks of Pawles Claus, and four other Mohawk chiefs: "We send herewith the census of our band, as required by the letter from Toronto. All

of our people, with the exception of two, are of mixed blood. It may appear strange to the Department that the Six Nations should be so entirely mingled with people of other countries; but it may be accounted for by the fact that our ancestors were allies of the British in the French and Revolutionary wars. It has always been a custom among the Six Nations to supply the place of warriors killed in battle by persons taken from the enemy, in the wars in which we were engaged. Many of our people were killed whose places were filled by prisoners. These prisoners settled in the band, and were always acknowledged as Mohawks. The Government of that time, knowing our old customs, received them as such, distributing presents to all alike. This happened so long since that the blood of the whites has almost become extinct. But since we have been asked the question, we felt it to be our duty to state the plain fact. No white man has, since the period above named, been recognised as a Mohawk, though a few of our women have married foreigners, the children of whom we recognise." One interesting example of a different class of adopted Indians is to be seen in the lodges of the Bay of Quinte, in an aged squaw, reputed to be one hundred and seven years of age. The child of white parents, she was carried off by the Indians in one of their marauding excursions, while they still dwelt in their native Valley of the Mohawk, and now survives, the mother of a chief, knowing no language but that of the tribe, as thorough an Indian in every sentiment and feeling as if the pure blood of the forest flowed in her veins.

The Mohawks, among whom the experiment of hybridity has thus been carried so far as almost to efface the last traces of pure Indian blood, betray no symptoms of inevitable decay and extermination. They are among the most civilized Indians of Western Canada, though still manifesting highly characteristic native traits uneradicated by all the admixture of white blood in their veins. The superintendent describes them as beset with an ungovernable propensity for what they term "speculation;" "swopping" horses, cattle, and buggies; and for "trade," *i.e.*, barter: in all which the whites invariably overreach them. "The Mohawks are excellent labourers for short periods. There are in this tribe several native carpenters and shoemakers, one tailor, and one blacksmith. They have at least one hundred and forty children of an age fit to go to school; but though loud in the apparent desire to have their children educated: like other tribes, the most trifling excuse serves to keep a large portion of them idling about the streets or fields with

their bows and arrows. These people, unlike the Chippewas, are not easily removed by threat or arguments from resolutions they may have formed; and they have been so much mixed up in trifling law-suits, that they consider themselves quite competent to express an opinion. In short, they have arrived at that state of semi-civilisation from which I believe nothing but their own future experience and convictions can disentangle them, and leave them open to the reception of friendly advice." There is something piquant in this phase of progressive civilisation, not without its parallel in many a European community, which thus exhibits the Mohawk growing wealthy, opinionative, and litigious; and vexing the soul of his friendly superintendent by choosing to have a will and an opinion of his own. All this, however, will right itself. The Mohawks of the Bay of Quinte appear to have passed the most critical transitional stage. Their numbers have exhibited a large and steady increase during the last seventeen years. Thomas Claus, one of the chiefs whose name is attached to the letter quoted above, is a skilful builder and carpenter; and when visited by the Commissioners in 1858, was employed in making a lectern for St. Paul's Church, Kingston, the workmanship of which was reported to be excellent. Like most of the Mohawks of the Bay of Quinte, he is a member of the Church of England; and he frequently plays the organ during the service in the Mohawk chapel there. Oronhyatekha, an educated Indian of the same tribe, is now pursuing his studies in the University of Toronto, and has already distinguished himself in the preliminary examinations for a medical degree.

In returns furnished to me from the Indian Department, the children are entered under two heads, the one as half-breeds, *i.e.*, the offspring of Indians of mixed blood, and the other as "illegitimate;" and it is added, "by illegitimate children in this return is meant the children of white men by Indian women." The latter, as is seen, are recognised as Mohawks, and of these twenty-three appear in their recent returns. This, therefore, points to a source of hybridity in full operation, which has contributed in a still larger degree to produce such a transformation on one band of the Hurons, as to render them nearly indistinguishable from the white settlers around them. Its influence must inevitably lead to the same results in every tribe thus settled amid the clearings on which the tide of European emigration is annually pouring its thousands, while the red race is cut off from all external sources from whence

to recruit its numbers and retard its inevitable absorption or extinction.

The Oneidas, another of the Six Nations settled on the river Thames, have already been referred to as occupying land purchased with their own money, on migrating from the United States. The comparatively independent position which they occupy is accompanied by very favourable evidences of capacity for self-government. They are settled in the immediate vicinity of the Chippewas and the Delawares or Munsees on the Thames; but their condition presents a favourable contrast to either of those tribes. In 1858, the Commissioners remarked of them: "This band, without any annuity or assistance from the Government, are better farmers than their neighbours the Chippewas. Their clearings are larger and better worked, many of them are able annually to dispose of considerable quantities of grain after providing for the comfortable support of their families. Their houses are generally of a better description, and many are well furnished and neatly kept. A portion of the band are very idle and dissipated, and spend most of their time in the neighbouring villages of the Whites; but taken as a whole, the Oneidas will compare most favourably with any Indians in Western Canada. In numbers there has been a gradual increase." They appear to have kept themselves apart from the Whites in a way that presents a striking contrast to the statistical disclosures in reference to some others of the Six Nations. The returns furnished to me include no illegitimate children, and specify only six half-breeds among the whole. 509 representatives of that ancient people, whose traditions embody a legend that the Onondagas and the Oneidas sprang together out of the ground on the banks of the Oswego River. At a date long prior to the intrusion of the white man, they separated from the Onondagas, and grew to the rank of an independent nation on the eastern shores of the Oneida Lake. There a little remnant still lingers; but the nation is broken and scattered. The larger number migrated to Wisconsin; this other portion survives apart on its Canadian reserve; and legend and national tradition are disappearing with that old past to which they pertain.

The returns of property, farming implements, and live stock, furnish no unfair test of the progress of the Indian settlements, and several of these have been referred to in illustration of their advancement in civilisation. In the case of the smaller or the less civilized bands, such property is necessarily on a diminished scale;

but the supplementary notes appended to their tables of statistics occasionally afford curious insight into the workings of the semi-civilized Indian mind, while at times they present a whimsical incongruity in the grouping of the common stock. In the census of the Mississagas of Chemong Lake, the public property belonging to the tribe is enumerated as "one log church, one waggon, one wood sleigh, one cow, three ploughs, and one harrow." The Snake Island Chippewas of Lake Simcoe "have, as public property, one frame school-house, occasionally used for public worship, three yoke of oxen, one plough, one harrow, two carts, one church-bell, and a grindstone." The Lake Skugog Indians, viewing with suspicion the designs of the Government agent in his too curious inquiries into their joint possessions, refused all information on the subject; while the Chippewas of Beausoleil Island, a shrewd band of industrious farmers, possessed of six yoke of oxen, fifteen cows, twenty head of young cattle, farming implements, and other useful property in proportion, communicated to the superintendent this practical stroke of financial policy, which might supply a useful hint to the chancellor of larger exchequers: "The schoolmaster, Solomon James, has been absent, therefore no school has been kept; and the band have resolved in council, that they will not pay any salaries to chiefs or others, except the doctor, as it is so much money taken from the general funds without any corresponding benefit." Such sagacious political economists might be safely assumed as no longer standing in need of any departmental superintendence.

From minute returns furnished to me from eight of the largest Chippewa reserves, it appears that out of 1839 Indians, 312 are of mixed blood; of the Mississagas, out of 530 Indians, 141 are of mixed blood; of 246 Potowattomies, only 20 are returned of mixed blood; and of 390 Delawares, only 16; though it can scarcely be doubted by any one familiar with the habits of frontier life, that all of those bands have taken up some considerable amount of white blood at an earlier date. In some of them the numbers are rapidly diminishing, under circumstances which could not fail to produce the same results on an equal number of white settlers; but in other cases increasing numbers are the healthful concomitant of industrious habits and accumulating property; and the Commissioners, in the Report of 1858, when urging the claims of the Indians to the permanent protection of the Imperial Government, add: "We cannot coincide in the opinion that the Indian service

is an expiring one. The statistics in this Report militate strongly against the theory of a steady decline in the numbers of the Indians."

Such, then, are the illustrations which Canada affords of the transitional process which precedes the inevitable disappearance of the last remnants of its aborigines, including refugees from the vast tracts of extinct nations, now occupied by the restless industry of the United States. The system of protection and pupilage under which, from the most generous motives, the Indian has hitherto been placed, has unquestionably been protracted until, in some cases at least, it has been prejudicial in its influence. It has precluded him from acquiring property, marrying on equal terms with the intruding race, and so transferring his offspring to the common ranks. While, however, in this transitional stage, a large proportion of the degenerate descendants of the aborigines absolutely perish in their premature contact with European civilisation, the half-breed of the frontier occupies a more favourable position. He mingles, in many cases, on a common footing with the settlers of the western clearings; his children grow up as members of the new community; and that inevitable process of amalgamation produces the same results there, which, it is manifest, are effacing every trait of Indian blood from the longest settled and most civilized survivors of the Indian nations of Canada.

The causes which have been referred to, as operating to prevent either the half-breed Indians or their posterity from being transferred in a condition of social equality to the common ranks of the New World's settlers, are neither irremediable nor of universal application. The honours of the Government House at Vancouver's Island were recently done by the daughters of an Indian mother; the hospitalities of more than one Canadian parsonage have been enjoyed by the author, where the hostess had the red blood of the New World in her veins; and Mr. Lewis H. Morgan, in replying to inquiries on the extent of hybridity in the United States, thus concludes: "When the Indian acquires property, and with it education, and becomes permanently settled, then honourable marriage will commence, and with it a transfer of the posterity to our ranks. I hope to see that day arrive; for I think we can absorb a large portion of this Indian blood, with an increase of physical health and strength, and no intellectual detriment." Whether it is calculated to prove beneficial or not, this process has not now to begin; though a change in the relative position of the civilized Indian with

the occupants of the older settlements may tend greatly to increase it. The same process by which the world's old historic and unhistoric races were blended into elements out of which new nations sprung, is here once more at work. Already on the Red River, the Saskatchewan, the Columbia, and Fraser's River, on Vancouver's Island, and along the whole Indian frontiers both of the United States and British North America, the Red and the White man meet on terms of greater equality; and the result of their intercourse is to create a half-breed population on the site of every new western clearing, totally apart from those of mixed blood who are reabsorbed into the native tribes. The statistics of the more civilized and settled bands of Indians in Upper and Lower Canada do not indicate that the intermixture of red and white blood, though there carried out under unfavourable circumstances, leads to degeneracy, sterility, or extinction; and the result of their intermingling in the inartificial habits of border life, is the transfer of a larger amount of red blood to the common stock than has hitherto, I believe, received any adequate recognition.

CHAPTER XXIII.

INTRUSIVE RACES.

ETHNOLOGICAL EXPERIMENTS—TRADITIONS OF THE AZTECS—PROCESSES OF MIGRATION—RATE OF PROGRESS—AFRICAN ENDURANCE—COLOURED POPULATION OF CANADA—VOLUNTARY ISOLATION—THE ISLAND OF HAYTI—INDIANS OF HISPANIOLA—THE HAYTIAN REPUBLIC—INHERITED ETHNICAL PROGRESS—HAYTIAN EXPORTS—POPULATION OF HAYTI—AFFINITIES AND REPULSIONS—MAN IN A STATE OF NATURE—A MODIFIER OF CREATION—CONDITION OF THE COLOURED RACE—MIXED WHITE AND NEGRO BLOOD—PHENOMENA OF HYBRIDITY—AMALGAMATION—DEVELOPMENT OF NEW VARIETIES—THE WHITE RACES IN AMERICA—THEORY OF ASSIMILATION—PERMANENCY OF TYPES—THE NEW ENGLANDER—THE ENGLISHMAN—PIGEON ENGLISH—PATOIS—THE OREGON JARGON—ACCENT AND EMPHASIS—BRITISH COLUMBIA—THE NEW WORLD'S FUTURE.

Do races ever amalgamate? Does a mixed race exist? asks Dr. Knox:[1] himself the native of that little island-world where, favoured by its very insulation, Briton and Gael, Roman, Pict, and Scot, Saxon and Angle, Dane, Norman, and Frank, have for two thousand years been mingling their blood, and blending their institutions into a homogeneous unity. In seeking an answer to the great problem of modern science involved in such inquiries, the insular character of Britain presents some important elements tending to simplify the inquiry. But the archæological and historical data illustrative of the process by which the island race of Britain,

> "This happy breed of men, this little world,"[2]

has attained to its present development, become of secondary importance, when compared with the gigantic scale on which undesigned ethnological experiments have been wrought out on the American continent. Admitting, for the sake of argument, all that is implied, not only in acknowledged Asiatic affinities of the Esquimaux, but the utmost that can be assumed in favour of any peopling of America by means of Phœnician, Celtiberian, ancient British or Scandinavian colonizations: it nevertheless remains

[1] *The Races of Men*, Lect. i.

[2] *Richard II.* Act ii. Sc. i.

indisputable that the Western Hemisphere has been practically isolated from the Old World and all its generations for unnumbered centuries. The traditions of the Aztecs told of an era when Quetzalcoatl, the divine instructor of their ancestors in the use of the metals, in agriculture, and the arts of government, dwelt in their midst. Fancy pictured in brightest colours that golden age of Anahuac, associated with the mythic traditions of some wise benefactor and civilizer. But amid all this, a curious definiteness pertains to the physical characteristics of this ancient benefactor. He was said to have been tall of stature, with a fair complexion, long dark hair, and a flowing beard. This remarkable tradition of a wise teacher, superior to all the race among whom he dwelt, and marked by characteristics so unlike the native physiognomy, was accompanied with the belief that, after completing his mission among the Aztecs, he embarked on the Atlantic Ocean for the mysterious shores of Tlapallan, with the promise to return. How far the rumours of Spanish invasion preceded the actual landing of Cortes, and helped to give shape to mere ancient traditions, it must be difficult to determine. Nearly thirty years elapsed between the first discoveries of Columbus and the landing of Cortes on the Mexican shores; and many a tale of the strange visitors who had come from the ocean's eastern horizon, armed with the thunder and the lightning, and with a skill in metallurgy such as the divine teacher of the art could alone be supposed to possess, may have shaped itself into vague conceptions of the good Quetzalcoatl, ere it reached the Mexican plateau. But the tradition seems like the embodiment of memories of older intercourse with the race of another hemisphere, when Egyptian or Phœnician, Greek, Iberian, or Northman, may have dwelt among the gentle elder race of the plateau, before the era of Aztec conquest, and taught them those arts wherein lie the essential germs of civilisation. If so, however, the race remained physically unaffected by the temporary presence of its teachers; and continued to develop all the special characteristics of the American type of man, until Columbus, Cabot, Verrazzano, and Cartier, Cortes, Pizarro, De Leon, Raleigh, and other discoverers and explorers, prepared the way for the great ethnological experiment of the last three centuries, of transferring the populations of one climate and hemisphere to other and totally diverse conditions of existence on a New Continent.

But now we witness on the American continent two essentially distinct forms of migration, by means of which the capacity of the

indigenous man of one quarter of the globe to be acclimatized and permanently installed as the occupant of another, is to be fully tested. First we have the abrupt transport of the Spaniard to the American archipelago, to the *tierra cdliente* of the Gulf coast, and the *tierra fria* of the plateau; the equally abrupt transference of the Englishman to the warm latitudes of Virginia and the bleak New England coast; and the attempt of the colonists of Henry IV. and Louis XIII. to found *la Nouvelle France* between Tadousac and Quebec, where winter reigns through half the year, and the thermometer ranges frequently from 30° to 40° below zero. Again, we have the compulsory migration of a population derived from the interior and the Atlantic coasts of the African continent, to the islands and those southern states of America, where experience indicates that the industrial occupation of the soil is incompatible with the healthful development of European races.

But on the same continent another and totally distinct process of migration is also in operation, analogous to that by which the ancient earth must first have been peopled, whether from one or many centres of human origin. Unnumbered ages may have elapsed after the creation of man, before, on the theory of his passage from Asia to America, the first progenitors of those whom we call its aborigines acquired a footing on the soil of the New World. Its ancient forests and prairies, its lakes, river valleys, and mountain chains, lay all before them, to be subdued, triumphed over, and, with their wild fauna, to be made subservient to the wants and the will of man. From one or many points the ever-widening circle of migration enlarged itself, until, throughout the broad territories of the Western Hemisphere, from the Pacific to the Atlantic, every region had passed to its first rightful claimants. Thus secured in full possession of the soil, the American Mongol made of it what he willed through all the centuries of his race's destiny, till that memorable year when, according to the traditions of the Mexican plateau, the race of Quetzalcoatl came to fulfil the doom of Montezuma's line, and to accomplish the prophecies of Aztec seers. Then followed the second migration to the New World, which is still in progress, and only differs from the primary migration in this, that the forest and the prairie are already in occupation; and, with their wild fauna, the scarcely less wild aborigines have to be subdued, supplanted, or embraced within the conquests of nature to the uses of civilized man.

Once more, accordingly, from many single points, as from the

Pilgrim Rock of Plymouth Bay, the new population has diffused itself continuously in ever-widening circles. It has been estimated that, under the combined influences of natural increase and constant augmentation by immigration, the outer circle of the great western clearings encroaches on the unreclaimed West at the rate of about nine miles annually throughout the whole extent of its vast border. We know that the New Englander, abruptly transplanted to South Carolina or Alabama, is as incapable of withstanding the climatic change as the Old Englander. But if we suppose the first settlers of New England to have been left to themselves, with their indomitable industry and earnest enterprise, to build up a well-consolidated community, to frame laws for the government of the growing society, and to send out hardy young pioneers to win for themselves the needful widening area: we can see how, in the lapse of centuries, younger generations would at length reach the Gulf of Florida and the Rocky Mountains, without any one of them having travelled beyond the circumference of its previously acclimated region; unless indeed we believe, with the extreme sticklers for well-defined habitats of indigenous races of men, that such an intrusive exotic race, however much it may seem for a time as though it were begetting native inheritors of the territorial acquisition, is in reality only

> "Like a circle in the water,
> Which never ceaseth to enlarge itself,
> Till, by broad spreading, it disperse to nought."[1]

This is the actual question which has to be solved by means of the dual migration of the fair and the dark races, who have become the supplanters of the indigenous tribes of America. And by means of such migration many questions besides this have already been at least provisionally answered. Are subdivisions of the human family indigenous in certain geographical habitats, and incapable of permanent translation to other regions? Are the indigenous types of such distinct habitats capable of innocuous amalgamation? In other words, do the subdivisions which ethnography clearly recognises in the human family, partake so essentially of the characteristics of distinct races among the inferior orders of creation, as to be incapable of permanently perpetuating an exotic life, or transmitting fertility to a mixed breed? To the different questions involved in this inquiry, one school of American and British ethnologists has replied with a distinct and strongly asserted

[1] *Henry VI.* Part I. Act i. Scene ii.

negative; and the strength of the convictions of American ethnologists is shown by their adoption of a view so inimical to the theory of permanent triumph as the destiny of the Anglo-American colonists of the New World.

The African, as has been already remarked, owed his involuntary migration to the Western Hemisphere to the belief, which the experience of centuries has confirmed, that this distinct type of man, transported to an entirely different geographical area, and to a diverse climate, would nevertheless prove more enduring than the indigenous Red Man of the soil. The whole instincts of an essentially unmaritime race were outraged by the transportation of the African to the New World. The caravan, and the patient assiduity of overland commerce and interchange of the commodities of countries separated by burning tropical regions and waterless deserts, have been the characteristics of Africa in every age. The camel is her ship of the desert, and maritime enterprise pertained there only to the era of her Punic colonies. No test could therefore seem more completely to satisfy all requirements, relative to Agassiz's postulate of the natural relations inherent in the different types of man, and the animals and plants inhabiting the same regions. A subdivision of the human family most strongly marked in type, in opposition to all its natural or acquired instincts, was forcibly transported to another continent, inhabited by indigenous tribes essentially diverse in all their physical characteristics. Ethnologists are not quite agreed as to all the results; for it is difficult for the American writer to separate the consequents of this great, though undesigned scientific experiment, from its incidental political and social bearings. This, however, is beyond dispute, that the African, under all the disadvantages of transference to a new geographical region and diverse climatic influences, has held his ground where the indigenous Red Man has perished. The difficult question of hybridity complicates the further bearings of the experiment; for a hybrid race like the "coloured people" of the United States, intermingling with a white race under relations which preclude them from free agency or voluntary isolation, such as pertain to the half-breed Indians of British America, is necessarily in an unstable condition.

There are upwards of four millions of people of African blood in the United States, and certainly not less than ten millions throughout the continent and islands of North and South America;[1]

[1] The numbers have been estimated as high as fourteen millions. That given

but of these the larger proportion consists of hybrids. Their numbers were, until very recently, increased to a small extent by direct, though illicit transmigration of the pure stock from Africa; still more they are largely augmented by the intermixture of white and black blood, under circumstances least accordant with the natural instincts of man, and placed for the most part beyond the reach of the statistician. All this complicates the question. It is impossible to determine how far the hybrid coloured population of the United States is capable of permanency,—either by the development of a fixed hybrid type, or by continuous fertility, until the predominant type reasserts its power, by a return to that of the original white or black parent;—so long as the mixed breed is constantly augmented in the Southern States by means at variance with the natural and moral relations of social life.

In Canada the coloured population was estimated in the census of 1850 to number about 8000; and by the census of 1861 they are shown to have increased—doubtless to a great extent by immigration,—to 11,395. The number is no doubt understated, as the older coloured settlers are unwilling to return themselves as such in the census papers; and in a country where the law recognises no distinction of colour, the ethnical differences of which it is the indication present little importance to the census-taker. But in 1863, Dr. S. G. Howe of Boston, visited Canada as a commissioner appointed to inquire into the condition of the coloured population in the Western Province. In his report he sums up the estimated numbers in Western Canada thus: "Intelligent people, acquainted with the matter, estimate the present population at from 20,000 to 30,000. Our own calculation is that it does not fall short of 15,000, nor exceed 20,000."[1] The Canadian settlers of African blood are chiefly congregated in the large towns and a few other localities, as at St. Catharine's, Chatham, and on the Buxton settlement in Western Canada. Admitted as they are to a perfect political equality, with access to the common schools and other educational institutions of the Province: they are placed under circumstances calculated to afford some fair test of their fitness for bearing a part in the progress of a free community, and of their

in the text is based on the following estimate: the United States, 4,200,000; Brazil, 2,000,000; Hayti, 950,000; South and Central America, 900,000; Cuba, 900,000; British Possessions, 700,000; French Possessions, 230,000; Dutch, Danish, and Mexican, 120,000. The data for some of the statements are very imperfect, but in such cases I believe the numbers are understated.

[1] *Report to Freedmen's Inquiry Commission*, S. G. Howe. Boston, 1864. P. 17.

capacity for acclimatization in a region essentially diverse either from the native continent of the African race, or the American States which have become, in a secondary sense, native centres of the coloured population of the New World. But too brief a period has elapsed to furnish any fair data for judging of the fruits of this experiment; and systematic inquiries instituted for the purpose of testing the results already noticeable, have led to no very precise or reliable returns. Dr. Howe, indeed, affirms conclusively "That the births have never equalled the deaths; and therefore there has been no natural increase, but on the contrary a natural loss; and that, without constant immigration, the coloured population of Canada must diminish and soon disappear." But it must be borne in remembrance that, while his estimation of their numbers nearly doubles that of the recent census, it is a mere vague approximation to the truth. The data, therefore, for any trustworthy deductions on such points are wanting; and his opinion on the evanescent character of the coloured population of Canada may be regarded as a mere echo of what has long been asserted by American statists and ethnologists on other than scientific grounds. The greater number of the coloured fugitives are recent immigrants; and many of them reached Canada in a condition not only of privation but disease, which might well lead to an excess of deaths over births, without involving any evidence that extinction is the inevitable destiny of such a population in the more favourable circumstances to which the survivors are attaining under the equality of British law. This, however, is to be observed, that, whether from habits already acquired under a different social condition, or from causes specially pertaining to their own physical and intellectual type, the coloured population of Canada voluntarily perpetuate social distinctions which separate them as a class from the general community. They have their own places of worship, their special societies, assemblies, and festivals; and thus throw obstacles of their own creating in the way of amalgamation. This is probably mainly to be accounted for by the prejudices of caste meeting them with little less force in Canada than the neighbouring Union; and by the fact that they necessarily belong, with few exceptions, to the poorer classes, and have therefore a keener sense of social equality among themselves, alike in religious and festive assemblies, than when asserting their claims to such among the general community.

But the experiment of a population of African origin transferred to a region essentially different from its native habitat, and after

mingling its blood alike with that of the native and the European, being at length left to its own resources for self-government and the perpetuation of the race: has been tried, and is still in progress, under very remarkable circumstances, in the island of Hayti. The island is nearly as large as Ireland; and, with a surface of about twenty-five thousand square miles, presents a remarkable diversity of soil and climate. The central mountain group rises to an elevation of some eight thousand feet above the level of the sea, and from this, mountain ranges branch off in various directions, dividing the island into broad valleys and extensive savannahs or meadows. With the surface thus broken up by lofty elevations, it is generally well watered in the valleys and plains, and is considered to be the most fertile, as well as one of the most healthy islands of the Antilles. It has a coast line of about twelve hundred miles in extent, indented with bays, and with many harbours, some of which are spacious, well sheltered, and offering accommodation for a numerous fleet. The climate is peculiar, with a rainy season occurring at different periods on its northern and southern coasts, and a temperature modified by the prevalence of northern winds, land breezes, and the varying elevations of the surface. The winter is equable and cool, and the heat of the summer is moderated by the prevailing winds, so as to present little climatic correspondence to any region of the African continent, and even to contrast strikingly in this respect with the other Antilles.

The history of this beautiful island is full of interest for us. When Columbus, during his first voyage among the earliest discovered islands of the New World, was perplexed amid the varied and deceptive allurements which hope and fancy conjured up for him on every side, the lofty mountains of Hayti rose on his view above the clear horizon, and gave evidence of a region of wide extent. The mountains were higher and bolder in their rocky outlines than any he had yet seen, and swept down, amid rich tropical forests, into luxuriant savannahs; while the cultivated fields, the canoes along the shore, the columns of smoke by day, and the fires that lighted up the island coast at night, all gave promise of a numerous population. Wandering amid the shades of its tropical vegetation, in the month of December, under trees laden with fruit, and listening to the melody of birds, among the notes of which they fancied they recognised the sweet voices of the nightingale and other songsters familiar to them in the far distant groves of Andalusia, the voyagers gave to the new-found island the name of

Española, or Little Spain. Among all the beautiful islands of the newly-discovered archipelago, none impressed the first voyagers so strongly with its natural charms, or with the virtues of the gentle race who lived amid the luxuriance of their favouring climate in a state of primitive simplicity. None, among all those who welcomed the strangers as heavenly visitants, were doomed to look back with more mournful bitterness on that fatal hour when the white sails of the "Santa Maria" first rose on their horizon. They are described by Las Casas as a well-formed race, fairer and more perfect in figure than the natives of other islands; but gentle, careless, and altogether indisposed to toil. Experience, indeed, soon revealed to the Spaniards the presence of the fierce Carib, as well as of the docile Indian native, on the island. But he was an intruder like the Spaniard; and Carib and Haytian shared alike in the exterminating violence of the Spanish lust for gold. They perished, toiling in the mines, in vain resistance to oppression, or despairingly, by their own hands; so that, according to the venerable Las Casas, who witnessed many of the horrors he describes, before twelve years had elapsed from their first friendly welcome of the Spaniards as celestial beings, several hundred thousands of the Indians had been exterminated. The original population of Hispaniola can only be a subject of conjecture; but in 1507 it had been reduced to sixty thousand: in 1535 only five hundred remained, and the last survivors of the aboriginal race died out in the early part of the eighteenth century. But it was at the earliest stage of this exterminating process that the idea was suggested, of substituting for the weak and indolent islander the robust and patient African. The first negroes were transported to the Antilles, in 1503, only eleven years after the discovery of Hispaniola by Columbus; and for three centuries thereafter the nations of Europe made merchandise of the African race, and transplanted them yearly by thousands to the islands and the mainland of the Western World. By such means were the aborigines displaced and supplanted by a different race; though they have not even now so totally disappeared but that the traces of Indian blood, intermingled with that of both intruding races, are discernible. Their characteristic features and luxuriant hair contrast strikingly with those of the predominant African type; and such mixed descendants of the native stock are still called *Indios*. The modern name of Hayti is a revival of a native term signifying "the mountainous country," and implying in its adoption the rejection of all foreign interference by its later race.

The French acquisition of the Haytian territory, which contributed so largely to its ultimate emancipation and independence, dates from the reign of Louis XIV. Towards the close of the eighteenth century, it was regarded as the most valuable of all the foreign settlements of France. But the Revolution, in which the descendants of the Grand Monarque perished on the scaffold, extended its influence to the remotest French possessions. In 1795, the negro slaves of Hispaniola were, by a vote of the National Convention, declared equal participators in the liberty and equality which France had proclaimed to all her citizens, and they hastened to imitate the example of Paris. A general insurrection of the coloured population ensued. All the white inhabitants who escaped massacre were compelled to emigrate, and Toussaint L'Ouverture, a black chief, established the first Haytian Republic in 1801. The subsequent history of Hayti, if compared with the neighbouring continental republic, is not very favourable to the capacity of the coloured race for self-government. Presidents, military dictators, emperors, and other changing phases of supreme rule, have marked the unstable constitution of the black republic. After the whole island had been united for a time, it divided once more into an empire and republic, parted by the same boundaries which formerly separated the French and Spanish divisions of the island; and Spain, taking advantage of a favourable opportunity, recently attempted to reassert a title to her ancient possessions. Meanwhile, the Emperor Solouque has been driven into exile; his marshals, dukes, barons, and knights have vanished with the fountain of such questionable honours; and by an enactment of the Legislative Chambers of Hayti, the chief portions of the extensive forfeited estates of the ex-emperor have been converted into rewards for prolonged military service. The instability of a government founded on insurrection and revolution has marked the varying phases of the Haytian Constitution. But the Government of France, since the reign of liberty and equality was proclaimed in Hayti, has not been so stable as to justify any contrast between it and its insular offshoot; whilst a comparison with the neighbouring Spanish republics of the New World tells even less in favour of the capacity for self-government of the colonists of southern European blood. In the Haytian Republic complete religious toleration is established, education is encouraged, and emigration of "the blacks, men of colour, and Indians in the United States and the British North American provinces," is invited by the offer of free grants of land, and

all rights of citizenship. A concordat between the Pope and President Geffrard has been published at Port-au-Prince, creating an archbishop and four bishops; and by a special article, his Holiness is not limited in the choice of these Haytian ecclesiastics, to the dark race. Time, therefore, must be allowed the Haytian before we infer from the history of this black Republic, that the men of mixed African blood are incapable of self-government, or of permanent independent existence.

In truth, this view of the great ethnological experiment forces us back on the question of inherited progress, and the physical and intellectual development of whole races by the protracted influences of civilisation. In the eighth and ninth centuries the insular Anglo-Saxon was among the least civilized of all the nations of Christendom. He was far inferior to the Irish Celt in arts and learning, though even then displaying greater capacity for self-government. Danish conquest and rule did something for him; Norman conquest accomplished a great deal more. Slowly, through successive generations, the Saxon helot of the Conquest grew into the sturdy English freeman of the Reformation era; and then, in the marvellous Elizabethan age that followed, while the principles of free government were still partially defined or understood, but when the intellect of the nation was at its ripest, the Anglo-Saxon colonization of the New World began. The Roman Catholic sought freedom there from Anglican intolerance; the Puritan found a refuge from ecclesiastical and political tyranny; and the schooling of England's Commonwealth, the Covenanters' struggle in Scotland, and the crowning Revolution settlement, all guided the little detached communities of exiled Englishmen scattered along the clearings from Cape Cod to the Gulf of Florida, and trained them, through a protracted minority, for independent self-government.

Can a grosser injustice be conceived of, than to place a government thus built on the foundations of a thousand years, by free sons of the freest nation in the world, in comparison with the hasty improvisation of a nation of slaves? In 1795, the whole educated, civilized, and governing class disappeared from Hayti; and a people far below the standing of the Saxon helot of the Conquest, galled with the recent chains of slavery which so peculiarly unfit man for moderation as a ruler, without education and without experience, were suddenly summoned to govern themselves. It is something to say of such a people that their government has not proved less stable, nor less compatible with the progress of the community, than

the republics established by the descendants of the Spanish discoverers and depopulators of Hispaniola.

The statistics of the Haytian Republic furnish some important contributions towards the desiderated answers to ethnological inquiries. So far as the material returns of the political economist are concerned, the response is anything but satisfactory. Seventy years ago Hispaniola was noted for its rich plantations of sugar, coffee, and cotton. Three years before the memorable declaration of the National Convention of Paris, the agricultural produce of that portion of the island, which then belonged to France, was valued at eight millions sterling. Sugar no longer reckons among the Haytian exports; the cotton plantations yield little more than one million pounds' weight per annum; the coffee plantations have been greatly reduced; and the whole annual exports little exceed one million pounds sterling. The principal commercial wealth of the island is now derived from the magnificent forests of mahogany and fine dye-woods with which its mountains are clothed, and the hides and jerked beef of numerous herds of cattle pastured on its verdant plains. The island aristocracy disappeared in the insurrection and emigrations of 1795, and with them the luxurious demands which the artificial wants of a highly civilized community create. The gardens and forests produce almost spontaneously cocoa-nuts, pine-apples, and the fruits introduced by the Spaniards from southern Europe, such as figs, oranges, pomegranates, and almonds. Maize, millet, cassava, plantains, and sweet potatoes are raised with little labour; and the Haytian race of African blood have to a great extent resumed the life of ease and careless indolent enjoyment in which the aborigines passed their days under the rule of their native caciques.

The Spaniards, who broke in upon that enviable scene, described the very social existence which they so ruthlessly destroyed, as seemingly realizing the golden age of poets' dreams. Doubtless it had its full share of the evils inseparable from the most favoured savage life; but the worst of these were of little moment when compared with the pandemonium which the presence of Europeans created. Perhaps the unproductive life of the modern Haytian, while supplying all his moderate wants, contrasts as favourably with the productive era prior to the declaration of independence, as did that of the gentle indigenous race before the Spaniards explored their mines for gold, and made the island a source of wealth alike to the colonist and the crown by the fatal system of *repartimiento*.

The present population is said to employ only about two hours a day in productive labour, and to seek its enjoyment in the pleasant ease to which the perpetual summer of the island climate invites. But conflicting parties and political revolutions, no less than the frequent hurricanes and occasional earthquakes of Haytian latitudes, disturb the reveries of such indolent dreamers, and recall them to some of the stern realities of life. The moral tone of the community, moreover, is reputed to be fully as low as might be anticipated among a people so recently emancipated from slavery; and thus it appears that neither the Indian Arcadia nor its African successor, amid all the unequalled advantages of soil and climate, could escape the malign elements by which man mars every paradise into which he is admitted.

But these are incidents apart from the real question: which is not whether an intrusive exotic race of pure or mixed African blood will raise any given quantity of sugar, coffee, and cotton; but whether it can rear such young generations of its own race as shall perpetuate the intruders, and beget permanent inheritors of the soil. Time is required for fully testing this question, but the statistics of the Haytian empire and Republic seem so far to render a very satisfactory reply. Before 1791 the population is believed to have been about 700,000 souls. Since then the commerce of the island has greatly decreased, but its population meanwhile has gone on steadily advancing. According to the census of 1824, it amounted to 935,000; in 1852, Sir Robert H. Shomburgk estimated it, including the empire and republic into which the island was then divided, at 943,000; and with the additions by recent immigration, besides the ordinary increase, it cannot now be less than 950,000 souls. This progressive increase in the population of Hayti has taken place under circumstances far from being favourable to such results. Revolts, expatriations, wars, and revolutions have all contributed to retard its progress; and in 1842 a terrible earthquake overthrew several towns, and destroyed thousands of lives. Nevertheless, during its brief term of independent existence, whatever other elements have tended to arrest its advancement, no indications hitherto suggest any proof of that inherent tendency towards degeneracy and sterility which have been affirmed to involve the inevitable extinction of such a hybrid race.

The evidence derivable from the four millions of coloured people in the United States, in reference to the subjects under consideration, is complicated, and deteriorated by various elements of uncertainty inseparable from the peculiar social condition in which they are

placed, especially in the Southern States. Nevertheless, the American coloured race offers to the ethnologist a highly interesting subject for investigation; and presents materials from which to gather data for future deductions of a more determinate character. Among American writers, Dr. J. C. Nott has given this subject the most systematic attention, and has enjoyed peculiarly favourable opportunities for its study, during a residence of half a century among the mingled white and black races of South Carolina and Alabama, and twenty-five years' professional intercourse with both. The conclusions he arrived at, it cannot be doubted, have been affected in some degree by opinions and prejudices inseparable from observations made on the two races placed on so unequal a footing as they are in the States referred to; and his deductions from the evidence he reviews, must be considered along with the fundamental theory he entertains, that the genus *homo* includes many primitive species, and that these species are amenable to the same laws which govern species in many other genera. He regards such species of men as all *proximate, i.e.*, producing with each other a fertile offspring, in contradiction to *remote species*, which are barren, and *allied species*, which produce *inter se* an infertile offspring. But along with this, he maintains that while some are perfectly prolific, others are imperfectly so, possessing a tendency to become extinct when their hybrids are bred together.[1]

More extended opportunities of observation have also led Dr. Nott to the conclusion that certain *affinities* and *repulsions* exist among various races of men, which cause their blood to mingle more or less perfectly. Contrary to deductions published before his observations were extended to Mobile, New Orleans, and Pensacola: he acknowledges having witnessed there many examples of great longevity among mulattoes, and sundry instances where their intermarriages, contrary to his antecedent experience in South Carolina, were attended with manifest prolificacy. He accordingly recognises an essential distinction between mulattoes of the Atlantic and Gulf States. The former he regards as the offspring of intermixture between the negro and *fair-skinned* European races, Teutonic and Celtic, between whom no natural affinity exists, and who are consequently destined to speedy extinction. The latter owe their white blood to French, Italian, Spanish, Portuguese, and other *dark-skinned* European races, with whom he conceives certain

[1] *Hybridity of Animals viewed in connexion with Mankind*, p. 379; *Types of Mankind*, p. 81.

affinities to the dark races of Africa exist. The classification of France in this latter group is manifestly suggested more by the actual history of the white colonists of the Gulf States, than by any preconceived ethnic characteristics; and it can only be detached from the Celtic nations of Europe by an exaggerated estimate of the very limited Basque element of its south-western provinces. But to this dark-skinned, black-eyed, black-haired Basque race of southern Europe, an approximation to the African Berber, both in physical and moral traits, is suggested; and thus sufficient ethnic affinities between the essentially distinct European and African "species" of man are recognised to account for the phenomena resulting from their intermixture. "Such races, blended in America with the imported negro, generally give birth to a hardier, and therefore more prolific stock than white races, such as Anglo-Saxons, produce by intercourse with negresses."[1]

In pursuing this inquiry, Dr. Nott has followed the example of Jacquinot, Hamilton Smith, and other ethnologists, in assuming that, "zoologically speaking, mankind and *canidæ* occupy precisely the same position," and that, in reference to the influences of climate, domestication, and hybridity, mankind is governed by the same zoological laws which regulate animals generally.[2] But these are propositions I am by no means prepared to admit. Apart altogether from the question of unity or multiplicity of species, this fact is entirely overlooked: that man's normal condition is that of domestication, which for all other animals is an essentially artificial one. Take man in what is popularly called a state of nature, such as the Red Indian of the American forests or prairies. He lives in a community controlled by many binding, though unwritten laws; he selects his food, and modifies it by artificial means, with the aid of fire, and various preparatory and conservative processes; he clothes himself with varying coverings according to the changing climate, and also according to fashion, taste, and prescriptive usage. His marriage, the treatment of his wife or wives, the physical nurture and training of his offspring, and the choice of the locality for their permanent residence, are all regulated in a very arbitrary manner, by motives and influences resulting from his social condition. The very shape of the head, the scarification and deformation of the body, and the rites and practices accompanying birth, puberty, marriage, sickness, and death, are all determined by complex influences; to which there is nothing analogous among the lower animals,

[1] *Hybridity of Animals*, p. 374. [2] *Ibid.* pp. 376, 394.

until man superinduces upon them artificial conditions of life which are natural to him. The hunted savage, driven forth into the wilderness, still manifests the "instincts" of domestic and artificial life. He, and he alone, is a clothing, cooking, fire-making, tool-using animal. In his most savage condition he is distinguished from all other animals by certain characteristics which point to civilisation as his normal condition. Accordingly, the civilized man is the most fully developed physically as well as intellectually. The white hunter and trapper soon surpasses the Indian even in the skill and endurance of forest life. The civilized man endures most easily sudden changes of climate, and withstands longest the privations to which previous training would seem calculated to render him most sensitive.

The very opposite of all this is true of the domesticated animal. Domesticated cattle, housed, artificially fed and tended, are superior to the wild cattle in the milk they yield, the supply of animal food they furnish, and the specialities of breed for the conditions best adapted for the uses to which man has diverted them. But their natural instincts have disappeared. They are less sagacious, less hardy, and have become altogether dependent on an artificial condition of existence which they cannot beget for themselves. And this domestication of the inferior animals is one of the artificial changes natural to man, and to man alone. The germ of it is seen in the savage with his dog and his horse. It constitutes the special characteristic of the next stage of social progress, the pastoral state; and in its full development man becomes in a peculiar sense a modifier of creation, a subordinate creator. As the result of this lordship over the inferior animals, we see the horse, the ox, the sheep, the hog, the ass, the camel, and the dog transplanted to the continents of America and Australia, to the Cape, and to every island where the civilized European has found inducements to effect a settlement. His wishes and necessities require it, and forthwith animal life multiplies in specific forms, on spots where nature had placed otherwise insurmountable barriers to its introduction. One man, Robert Bakewell of Diskley, originated the Leicester breed of sheep; to another, Arthur Young, is ascribed the South-down breed; so also, short-horn and long-horn, Durham, Devon, and Ayrshire cattle have been successively called into being, and perpetuated or abandoned at the will of man. The favourite form, colour, or breed has been transferred to the remotest regions of the earth, and multiplied as the supplanters of their indigenous

fauna. The hybrid mule is annually produced by thousands, developing peculiar attributes and instincts, of singular value to man. Even fashion has exercised its influence; and with the demand for black, bay, chestnut, or grey horses, the stock-breeder has modified his supply. Butchery, reduced to an accredited craft in the shambles and markets of civilized man, has shocked the sensibilities of many; but it must not be overlooked that the droves of Smithfield owe their existence, no less than their destruction, to his will; and if it were possible that "vegetarian" enthusiasts could convert the civilized world to their herbivorous diet, the extinction of domesticated animal-life would only be prevented in so far as the milk of the cow and the wool of the sheep still supplied a motive to man for their perpetuation.

The existence and condition of the coloured population of the Western Hemisphere most nearly approximate to those of the wild animals which have been domesticated, and modified in form and habits to meet the wants of civilized man. The African transported to America was as little a free agent as the horse or the hog, which multiplied there even beyond the wants of their transplanter. It is indisputable, moreover, that the coloured race has been purposely multiplied for sale. But the horse, which has run free, has returned to the broad pampas, and resumed the wild life of his Asiatic sire; while the African of Hayti, instead of resuming the savage life of his fatherland, has set up republics and empires, instituted ranks and titles, established churches and schools, and is even now striving towards law, order, and a more perfect civilisation. In truth, though the ethnologist does regard man as an animal, he must never lose sight of the fact that that animal is man. He cannot divest man, as an animal, of his moral nature, his reasoning faculties, his use of experience, his power of communicating knowledge by speech and writing, or his natural use of artificial appliances at every stage of his being, from the rudest stone or flint tool of the savage, to the telescope, the steam-engine, the electric telegraph. On all those grounds, therefore, may we demur to the assumption that, even in relation to the laws affecting hybridity and the perpetuation of species, the principles applicable to animals generally, or to any specific species of animals, are therefore applicable to man.

The following are conclusions apparently involved in the opinions arrived at by Dr. Nott in relation to the mixture of white and Negro blood in the United States:—

1. The mulattoes and other grades of the coloured race may be

assumed as the invariable offspring of white paternity. "It is so rare in this country," Dr. Nott remarks, "to see the offspring of a Negro man and a white woman, that I have never encountered an example; but such children are reported to partake more of the type of the Negro than when the mode of crossing is reversed."

2. The offspring of the Spanish or other dark-skinned European race and the Negro is hardier, more prolific, and therefore more likely to be permanent than that of Anglo-American paternity.

3. Mulattoes are less capable of undergoing fatigue and hardship than either the blacks or whites, and are the shortest-lived of any class of the human race.

4. Mulatto women are peculiarly delicate, and subject to a variety of chronic diseases. They are bad breeders, bad nurses, liable to abortions, and their children generally die young.

5. Mulattoes, like Negroes, although unacclimated, enjoy extraordinary exemption from yellow fever when brought to Charleston, Savannah, Mobile, or New Orleans.

6. When Mulattoes intermarry they are less prolific than when connected either with the white or Negro stock; and all Mulatto offspring, if still prolific, are but partially so, and acquire an inherent tendency to run out, and become eventually extinct when kept apart from the parent stocks.

Assuming, for the sake of argument, that those conclusions are indisputable, they reveal a very remarkable series of results, when brought into comparison with data which the census supplies. The Superintendent of the Census of the United States for 1850 appears to have arrived at very different results when estimating the progressive increase of the slave and coloured population. Deriving his information from various sources, he set down the whole number of Africans imported at all times into the United States prior to 1850 at from 375,000 to 400,000.[1] At present the number of their descendants, including those of mixed blood, exceeds 4,000,000. With every deduction for the influence of the pure stocks on such increase, in a country where intermarriage between the white and coloured races is almost unknown, it seems scarcely possible to reconcile such results with the idea of a race having within it the elements of disease, sterility, and inevitable extinction. Moreover, in estimating the full value of the previous summary of conclusions deduced from observed facts, one important admission must be taken into account. "I have found it impossible," observes Dr.

[1] *Compendium of the Seventh Census of the United States*, p. 13.

Nott, "to collect such statistics as would be satisfactory to others, and the difficulty arises solely from the want of chastity among mulatto women, which is so notorious as to be proverbial." This, and further remarks illustrative of the same statement, go far to neutralize the value of Nos. 3, 4, and 6; and to suggest totally different causes for the liability to disease, physical weakness, and sterility, of a race placed under such unfavourable circumstances either for moral or physical development. Sir Charles Lyell, in commenting on the affirmed relative intellectual capacity of the coloured race according to the predominance of white or black blood, adds: "It is a wonderful fact, psychologically considered, that we should be able to trace the phenomena of hybridity even into the world of intellect and reason." Yet it is not more wonderful than the familiar examples of transmitted intellectual characteristics from one or other parent of the same race, or the supposed influence of a superior maternal intellect on the corresponding mental faculties of distinguished sons. But it may be presumed that no one is prepared to maintain the monstrous doctrine that the profligacy of the southern mulattoes is an inevitable result of hybridity. Yet, unless such can be proved, the weakness, disease, and sterility of the mixed race is produced by the very same causes which have degenerated and brought to an ignoble end some of the royal lines and the most ancient blood of Europe.

Again, Dr. Nott discusses the possibility of gradual amalgamation merging the coloured into the predominant white race. It is admitted that, according to the assertion of both French and Spanish writers, when the grade of *quinteroon* is reached the Negro type has disappeared. So thoroughly has this been recognised that, by the laws of some of the West India Islands, this grade of descent was free. But, in commenting on this, Dr. Nott adds: "It must be remembered that the Spaniards and a certain portion of the population of France are themselves already as dark as any quinteroon, or even a quadroon, and thus it may readily happen that very few crosses would merge the dark into the lighter race." Sir Charles Lyell speaks of having met in South Carolina some "mulattoes" whom he could not distinguish from whites. But against this Dr. Nott sets his experience of half a century, and adds: "I am not sure that I ever saw at the South one of such adult mixed-bloods so fair that I could not instantaneously trace the Negro type in complexion and feature." He accordingly affirms, as the only rational explanation, that "the mulattoes, or mixed breeds, die off

before the dark stain can be washed out by amalgamation." But against opinions founded on such long experience, it may still be permissible to say that, supposing the descendant of mixed blood, quinteroon, sexteroon, or octoroon, to have reached that condition which, in the West India Islands at least, is no abstract theory, of being no longer distinguishable from the white race, how is such descent to be detected? The freed man, thus emancipated from a degraded caste, is not likely to blazon the bend-sinister on his escutcheon. In my own experience I have seen in Canada several descendants of such mixed blood, who, still perhaps retaining such minute traces as the experienced eye of the author referred to would detect, yet could mingle without observation in any white assembly. In one case I have observed the eldest son of a white father and a mulatto mother in whom no casual observer could detect the slightest traces of the maternal blood; and who only betrays such in a complexion not darker than many of pure white descent. But this, it must be admitted, is not strictly an example of amalgamation, but an illustration of the predominance of the original pure stock; as is further shown by the return, in the case of younger members of the same family, not only to the true mulatto complexion, but to the crisp woolly locks of the African type. Nevertheless this white descendant of mixed blood, having married a white wife, has healthy offspring, betraying no traces of African blood. Another and more conclusive case which has come under my observation in Canada is that of a young woman descended of white and coloured parentage, the mother being probably a quadroon, from her appearance. Her hair is long and flowing, her complexion good, and the only trace of Negro blood is in the eye, which I have observed both in the red and black hybrid is one of the most enduring traits of the darker blood.

Intellectually the mulattoes are declared to be intermediate between the blacks and the whites; and Sir Charles Lyell was informed in Boston, that the coloured children were there taught separately from the whites, not from an indulgence in anti-Negro feelings, but because "up to the age of fourteen the black children advance as fast as the whites; but after that age, unless there be an admixture of white blood, it becomes in most instances extremely difficult to carry them forward." But this is manifestly a mere evasion of distinctions traceable to the spirit of caste, which has led to separate coloured schools in Canada as well as in New England. If the Boston coloured children advanced with average intellectual capa-

city up to the age of fourteen, they must have completed their common school education; and only those who aimed at the Central High School, or Harvard College, could remain to compete with their white rivals. There need be no hesitation, however, in allowing *à priori* probabilities in favour of the intellectual inferiority of the coloured people of America as a class, notwithstanding striking exceptional examples of the reverse. So far as their blood is African, they are the descendants of an unintellectual and uncultured race; and in so far as they are the offspring of southern coloured blood, they are sprung from a people excluded from every source of intellectual or moral development; so that to expect the coloured American to stand up at once on a par with the Anglo-American—

"The heir of all the ages in the foremost files of time,"

is simply to expect grapes of thorns, and figs of thistles.

But the ethnological phenomena of the American continent invite to the consideration of other and totally distinct questions from that of the mixed races which have resulted from the policy of the European colonists of the New World. That the admixture of European or African with Indian blood, must result in the development of new and intermediate varieties, is a conclusion which all previous experience rendered probable. But propositions bearing on the whole question of man's migrations are also here subjected to practical tests. Do the climatic and other changes consequent on the transference of Europeans from the Eastern to the Western Hemisphere, without any admixture of blood, tend to develop new and permanent varieties? or is the geographical range of distinct types of man so absolutely determined as a law of nature, that the mere transference of such to another region involves their ultimate extinction? are queries both of which have already been answered in the affirmative, from evidence derived from the data which phenomena attendant on the colonization of America supply.

Among those who have maintained that the great experiment of transferring a population indigenous to one continent, and attempting to make of it the colonizers and permanent occupants of another continent, must inevitably end in failure, Dr. Knox takes a foremost part. After questioning the perfect acclimation of the horse, the ox, and the sheep, he proceeds to ask: "How is it with man himself? The man planted there by nature, the Red Indian, differs from all others on the face of the earth. He gives way before the European races, the Saxon and the Celt: the Celti-

berian and Lusitanian in the south; the Celt and Saxon in the north. Of the tropical regions of the New World I need not speak; every one knows that none but those whom nature placed there can live there; that no Europeans can colonize a tropical country. But may there not be some doubts of their self-support in milder regions? Take the Northern States themselves. There the Saxon and the Celt seem to thrive beyond all that is recorded in history. But are we quite sure that this success is fated to be permanent? Annually from Europe is poured a hundred thousand men and women of the best blood of the Scandinavian, and twice that number of the pure Celt; and so long as this continues he is sure to thrive. But check it, arrest it suddenly, as in the case of Mexico and Peru; throw the *onus* of reproduction upon the population, no longer European but native, or born on the spot; then there will come the struggle between the European alien and his adopted fatherland. The climate, the forests, the remains of the aborigines not yet extinct; last, not least, that unknown and mysterious degradation of life and energy which in ancient times seems to have decided the fate of all the Phœnician, Grecian, and Coptic colonies. Cut off from their original stock, they gradually withered and faded, and finally died away. Peru and Mexico are fast retrograding to their primitive condition; may not the Northern States, under similar circumstances, do the same?"[1] Such are the ideas formed on this subject by an English anatomist and physiologist; nor are they without support among those whose national predilections might have been presumed sufficient to preclude them from readily yielding acceptance to such opinions. Dr. Nott, after affirming that negroes die out, and would become extinct in New England if cut off from immigration, adds: "It may even be a question whether the strictly white races of Europe are perfectly adapted to any one climate in America. We do not generally find in the United States a population constitutionally equal to that of Great Britain or Germany; and we recollect once hearing this remark strongly endorsed by Henry Clay, although dwelling in Kentucky, amid the best agricultural population in the country."[2] Such an opinion must be the result of deep conviction before it could be publicly avowed by an American writer, even though a necessary corollary from the general proposition he asserts relative to the origin and geographical distribution of animals and man.

[1] *Races of Men*, p. 71.

[2] *Distribution of Animals and the Races of Men, Types of Mankind*, p. 68.

The English anatomist, freed from all national sympathies or prejudices, deals with this idea of the degeneracy of the Transatlantic European, or the Euromerican as it may be convenient to call him, in still more uncompromising fashion: "Already," he exclaims, "the United States man differs in appearance from the European. The ladies early lose their teeth; in both sexes the adipose cellular cushion interposed between the skin and the aponeuroses and muscles disappears, or at least loses it adipose portion; the muscles become stringy, and show themselves; the tendons appear on the surface; symptoms of premature decay manifest themselves;"[1] and the conclusion he deduces is that these indicate "not the conversion of the Anglo-Saxon into the Red Indian, but warnings that the climate has not been made for him, nor he for the climate." The latter remark is the more noticeable from the singular though undesigned contradiction offered to it by another distinguished physiologist. Dr. Carpenter remarks, in his *Essay on the Varieties of Mankind*,[2] "It has not been pointed out, so far as the author is aware, by any ethnologist, that the conformation of the cranium seems to have undergone a certain amount of alteration, even in the Anglo-Saxon race of the United States, which assimilates it, in some degree, to that of the aboriginal inhabitants;" and after noting the peculiarities of New England physiognomy, he thus proceeds: "There is especially to be noticed an excess of breadth between the rami of the lower jaw, giving to the lower part of the face a peculiar squareness, that is in striking contrast with the tendency to an oval narrowing which is most common among the inhabitants of the old country. And it is not a little significant, that the well-marked change which has thus shown itself in the course of a very few generations, should tend to assimilate the Anglo-American race to the aborigines of the country: the peculiar physiognomy here adverted to, most assuredly presenting a transition, however slight, toward that of the North American Indian." Were the opinions thus confidently affirmed borne out by my own observations, I should be tempted to assign to some admixture of red blood, as already adverted to in a former chapter, a share at least in so remarkable a transition from the European to the American type of man. But I can scarcely imagine any one who has had abundant opportunities of familiarizing himself with the features of the Indian and the New Englander, tracing any approximation in

[1] *Races of Men*, p. 73.
[2] Todd's *Cyclopædia of Anatomy and Physiology*, vol. iv. p. 1330.

the one to the other. Nevertheless the physiognomical and physical characteristics of the New Englander are subjects of study of the highest importance to the ethnologist.

The evidence supplied by ancient monuments, and especially by the sculptures and paintings of Egypt, of the undeviating character of some of the most remarkable existing types of man, has been frequently employed as an argument in favour of the permanency of types, and consequently of the essential diversity and multiplicity of human species; and it has been confidently asked, —"If all the different races of man are indeed only varieties of one species, how is it that no well-ascertained variety has originated within historic times?" It is, therefore, a fact of the utmost value, if it be true that in the New Englander or Yankee, we have such a variety unmistakably presented to us. His history is well known. Two hundred and forty-five years ago, the little "Mayflower" landed on the bleak shores of New England the pioneers of civilisation. They came of a noble old stock, and brought with them the sturdy endurance of the Saxon, and the lofty spirit of the Christian patriot; and the self-denial, the daring, and the stern endurance of the Pilgrim Fathers, were needed on that bleak November day of the year 1620, when the little band were landed on Plymouth rock, to make for themselves a home and a country in the forest wilderness. Now, after an interval of two centuries and a half, it is acknowledged on all hands that the New Englander differs in many respects very unmistakably from the Old Englander. Dr. Knox, whilst admitting it, solves the difficulty by classing him with the degenerate Spaniard of Mexico and Peru, already hastening, as he conceives, to speedy extinction. But the Mexican of Spanish descent scarcely differs more widely, in his degeneracy, from the conquistador of Cortes, than does the modern Spaniard from the proud subject of Charles V. The causes of the degeneracy of both are patent to all, and lie to a great extent apart from questions of climate or geographical distribution. But, as we have seen, Dr. Knox further affirms that the New Englander already manifests symptoms of premature decay; and Dr. Nott, a native American, admits that his countrymen are constitutionally inferior to those of Germany or Great Britain. The latter statement is consistent with every probability, on a continent which, in the Northern States, combines the extremes of temperature of Rome and St. Petersburg. But ever in this respect the New Englander is unusually favoured with the cooling breezes

and the equalizing temperature of the Atlantic, tempering his northern latitudes, and exposing him to less violent extremes of heat or cold; and all experience disproves this theory of degeneracy and decrepitude. He is proverbial for his energy, acuteness, and physical and intellectual vigour. The homes of New England approximate to those of the mother country in their genial, domestic attractions; and yet the enterprising Yankee is as indefatigable a wanderer as the sturdy Scot. So thoroughly is he the type of American enterprise, that even among the Indians on the North Pacific coast, where a strange *lingua Franca* has been developed as the means of intercourse between natives and whites, the designation for an American is *Boston,* derived from the capital of the State of Massachusetts. And, while he is thus known on the remote Pacific shores; the New England States reveal everywhere the evidence of indomitable perseverance, successful industry, and the proofs of old settlements progressing under the same energy and patience which have united to make England what she is. Nevertheless, it is most true, that it is easy for any one familiar with the New England physiognomy to point out the Yankee in the midst of any assemblage of Englishmen. He furnishes the required example of a new variety of man produced within a remarkably brief period of time, by the same causes which have been at work since man was called into being, and scattered abroad to people the whole earth. If intermixture of blood has contributed any share in the development of such a physical change, that has been the invariable consequent of all colonization of previously peopled regions. If it be further ascribed to changes of climate, diet, habits, occupation, and intellectual training, all these have been in operation wherever man has wandered forth to seek a new and distant home in the wilderness. And if two centuries in New England have wrought such a change on the Englishman of the seventeenth century, what may not twenty centuries effect? or, what may be the ultimate climatic influences of Canada, the Assinaboine Territory, or Fraser's River; of Utah, California, or the States on the Gulf?

It is only some twelve centuries since the Angle and Saxon migrated as foreign intruders to England, where the remnant of the elder native race still speak, in their ancient British language, of the *Saesonach* as strangers. The transmigration, though from a nearer coast than that of their New England descendants, was a maritime one, and the change involved in the transfer to the

peculiar insular climate of England was not inconsiderable. The Englishman of the present day is distinguishable from all his continental Germanic congeners, and is himself a type of comparatively recent origin. Moreover, the Englishman of the genuine Angle and Saxon districts, to the south of the Humber, is a markedly distinct type from the northern race, from the Humber to the Moray Firth; while again, in the Orkney Islands, the descendants of its Norse colonists of the ninth and tenth centuries, not only retain distinctive physical characteristics; but their inherited maritime instincts and enterprise are so universally recognised, that the English as well as Scottish Greenland fleets annually strive to complete their crews at Kirkwall, before proceeding to the northern seas. The Orkney mariner and fisherman in his island home is exposed to the utmost violence of the northern sea; and in navigating the Pentland Firth, has to cross a strait swept by the currents and subject to the tempests of the Atlantic and German oceans. But that this alone would not make a seaman of him, is proved by the proverbial disinclination to all maritime daring of the hardy Celtic population of the Hebrides and the west of Ireland.

It is in such minute ethnology that the truths of the science must be sought. The simplicity of such systems as that of Blumenbach, with his five human species; of Pickering, with his eleven races of men; or Borey de St. Vincent, with his fifteen species; or again of Virey, who can overcome all difficulties if allowed two distinct human species; and of Morton, who, for the whole American continent, from the Arctic circle to Cape Horn, admits of only one type of man: is exceedingly plausible and seductive. When we place alongside of each other Blumenbach's typical Caucasian, Mongolian, Malay, Ethiopian, and American, the physical differences are striking and indisputable; but when we come to examine more minutely, the Caucasian region of Europe has its fair and its dark-skinned races; the little island of Britain has its three, four, or five distinct types; and it seems probable at last, that if we must divide mankind into distinct species, we may find that not five, but five hundred subdivisions, will fail to meet all the demands of extended observation. Well-defined types have perished, and new ones have appeared within the historic period; and if all the intermediate links between one and another of the great subdivisions of the genus *homo* cannot now be found, the causes for their disappearance are sufficiently manifest. Nevertheless, the science has still many difficult questions to solve. The physical differences

between the dark, woolly-haired negro and the blue-eyed, fair-haired Anglo-Saxon, are great, but not greater than those others which distinguish the Aryan and monosyllabic languages.

On ancient historic sites along the shores of the same Indian Ocean have been recovered the highly-inflected Sanscrit, with its wonderful richness of grammatical forms, its eight cases, its six moods, and its numerous suffixes; and the monosyllabic Chinese, entirely devoid of inflections, or even what seem to us grammatical forms. But in the history of the Romance languages, we see how curiously, first by a process of degradation, and then of reconstruction, a whole group of new languages has sprung from the dead parent stock, presenting diversities so great as those which distinguish the ancient Latin from the modern French. Moreover, we witness, on the native area of the monosyllabic Chinese, our own vernacular tongue actually passing through the first transforming stages, in the "Pigeon English" of Hong-Kong and Canton. Its name, *pigeon*, an apt illustration of its vocabulary, is the Chinaman's pronunciation of the word *business*. Mr. James H. Morris, a recent Canadian visitor to China, remarks: "This language has become a regular dialect, and, when first heard, it would appear as though the speaker was parading indiscriminately a few English words before his hearer, whose duty it was to make a meaning out of them. A foreign resident will introduce a friend to a Chinese merchant as follows: *Mi chinchin you, this one velly good flin belong mi; mi wantchie you do plopel pigeon along he all same fashion along mi; spose no do plopel pigeon, mi flin cum down side mi housie, talke mi so fashion mi kick up bobbery along you.* To which the Chinaman will reply:—*Mi savey no casion makery flaid; can secure do plopel pigeon long you flin all same fashion long you.*" This language is as simple as it seems absurd; but the words must be arranged as the Chinaman has been accustomed to hear them, or he will not understand what is said. It is spoken in all the ports of China open to foreign trade, and there is no disposition to adopt a purer one.

The languages of Europe are undergoing the very same process of degradation and reconversion into new dialects and languages, on the American continent. The Negro-French is stripped of all its grammatical richness, and simplified into a dialect scarcely intelligible to a Parisian; and Negro-English, though checked in its progress of degradation by constant contact with the vernacular tongue, has dropped many of its inflexions, altered the irregular

tenses in defiance of euphonic laws, and modified the vocabulary in a manner that only requires complete isolation to beget a distinct dialect, and ultimately a new language. Mr. William H. Hodgson, of Savannah, Georgia, showed me a remarkable illustration of this. It consisted of portions of the Scriptures written by a native African slave, in Negro *patois* and in Arabic characters. The writing was executed with great neatness, but a more puzzling riddle could scarcely be devised to tax the ingenuity of the Semitic scholar. In Lower Canada, also, French is already written and spoken with many English idioms, and with modified terms of English or Canadian origin. But it is on the North Pacific coast that the most remarkable example of the development of an entirely new language out of the commingling English and native vocabularies, is now in progress. Mr. Paul Kane, during his travels in the North-west, resided for some time at Fort Vancouver, on the Columbia river, and acquired the singular *patois*, styled the Oregon jargon, which is there growing into a new language. The principal tribe in the vicinity is the Chinook, a branch of the Flathead Indians, whose native language so entirely baffles all attempts at its mastery, that it is believed none have ever attained more than the most superficial knowledge of its common utterances but those who have spoken it from childhood. Pickering remarks, on his approach to the straits of De Fuca, "after the soft languages and rapid enunciation of the Polynesians, the Chinooks presented a singular contrast, in the slow, deliberate manner in which they seemed to choke out their words, giving utterance to sounds some of which could scarcely be represented by combinations of known letters." After hearing its utterances as spoken for my behoof by more than one traveller, I can only compare them to the inarticulate noises made from the throat, with the tongue against the teeth or palate, when encouraging a horse in driving. Mr. Kane states in reference to it, "I would willingly give a specimen of the barbarous language were it possible to represent by any combination of our alphabet the horrible, harsh, spluttering sounds which proceed from the throat, apparently unguided either by the tongue or lips."

Fort Vancouver is the largest of all the posts in the Hudson's Bay Company's Territory, and has frequently upwards of two hundred voyageurs with their Indian wives and families residing there, besides the factors and clerks. A perfect Babel of languages is to be heard amongst them, as they include a mixture of English,

Canadian-French, Chinese, Iroquois, Sandwich Islanders, Crees, and Chinooks. Besides these the Fort is visited for trading purposes by Walla-wallas, Klickatats, Kalapurgas, Klackamuss, Cowlitz, and other Indian tribes; and hence the growth of a *patois* by which all can hold intercourse together. The English, as it shapes itself on the lips of the natives, forms the substratum; but the French of the voyageurs has also contributed its quota, and the remainder is made up of Nootka, Chinook, Cree, Hawaiian, and miscellaneous words, contributed by all to the general stock. The common salutation is *Clak-hoh-ahyah*, which is believed to have originated from their hearing one of the residents at the Fort, named Clark, frequently addressed by his friends: "Clark, how are you?" The designation for an Englishman is *Kint-shosh, i.e.*, King George; while an American is styled *Boston. Tala, i.e.*, dollar, signifies silver or money; *oluman, i.e.*, old man, father, etc. The vocabulary as written, shows the changes the simplest words undergo on their lips: *e.g.*, fire, *paia;* rum, *lum;* water, *wata;* sturgeon, *stutshin;* to-morrow, *tumola;* cold, *kol;* suppose, *pos;* wood, or a tree, *stik;* dry, *tlai*, etc. And the French in like manner: la médecine becomes *lamestin;* la grasse, *lakles;* courir, *kuli;* la langue, *lalan;* les dents, *litan;* sauvage, *sawash, i.e.*, Indian; la vieille, *lawie*, etc. The formation of the vocabulary appears to have been determined to a great extent by the simplicity or easy utterance of the desired word in any accessible language, or familiar imitative sound. As to the grammar: number and case have disappeared, and tense is expressed by means of adverbs. Nouns and verbs are also constantly employed as adjectives or prefixes, modifying other words; and are further increased, not only by borrowing from all available sources, but by the same onomatopœic process which has already been referred to as one of the sources of growth in all languages. Thus we have *moo-moos*, an ox, or beef; *kalakala*, a bird; *kwehkweh*, a duck; *tiktik*, a watch; *tingling*, a bell; *hehe*, laughter; *tumtum*, the heart; *tum-tumb*, or *tum-wata*, a waterfall; *klak*, let go, or the sound of a rope suddenly loosed; *mash*, the sound of anything falling; *olo*, hungry, thirsty; *tsish*, cold; *wawa*, to speak; *pah*, to smoke; *poo*, to shoot; *mok-e-mok*, to eat, or drink; *liplip*, to boil. Nor is this patois a mere collection of words. Mr. Kane informs me, that by means of it he soon learned to converse with the chiefs of most of the tribes around Fort Vancouver with tolerable ease. The common question was: *cacha-mikha-chacha*, where did you come from? and to this the answer was: *sēy-yaw*, from a distance;

but in this reply the first syllable is lengthened according to the distance implied, so that in the case of the Canadian traveller he had to dwell upon it with a prolonged utterance, to indicate the remote point from whence he came. This stress of voice, or prolongation of the sound, modifies many words and phrases; *e.g.*, *haiās*, great, with the last syllable drawn out, becomes exceedingly great; *ānakati*, with the first syllable prolonged, signifies very long ago; and the transition from the positive to the superlative degree is wrought by similar means, on *haiak*, quick; *haiu*, many; *tanas*, little, young, or a child; etc. Traces of an inflectional process are observable; *e.g.*, *iakwa*, on this side; *iawa*, on that side; *matlini*, near the river; *matlkwili*, inland, or away from the river; *mitkoi*, to stand; *mitlait*, to sit, or reside; etc. The pronouns are *neiki*, I; *mikha*, thou; *yahka*, he; *musaika*, we; *nusaika*, ye; *klaska*, they; as: *neiki mok-e-mok tschuck*, I drink water; *kata nem mikha papa*, what is the name of your father? But accent and varying emphasis modify the sense in which the words are to be understood; and the relation of words in a sentence, or their case, tense, etc., is determined by their position, as in the Chinese. Mr. Hale, the philologist of the United States Exploring Expedition, remarks in reference to the Indians and voyageurs on the Columbia river: "The general communication is maintained chiefly by means of the *jargon*, which may be said to be the prevailing idiom. There are Canadians and half-breeds married to Chinook women, who can only converse with their wives in this speech; and it is the fact, strange as it may seem, that many young children are growing up to whom this factitious language is really the mother-tongue, and who speak it with more readiness and perfection than any other."

Thus in all ways are the emigrants from the Eastern Hemisphere making a new world of the West. The face of the country, its fauna and flora, with man himself, his habits, arts, and languages, are all being modified, effaced, displaced. Whatever be the fate of the intrusive races, they have wrought mightier changes in two centuries, than it is probable the American continent witnessed for twenty centuries before. The rapidity, indeed, with which such changes now take place strikes the onlooker with astonishment, and is inconceivable to those who have not witnessed it for themselves. In 1841, the "Vicennes," fresh from exploring the islands and coasts of the Southern Ocean, entered the Straits of De Fuca, and Dr. Pickering describes his impressions on landing. The maritime skill of the Chinooks, their eagerness for traffic,

and the striking quietness of their movements, all excited his interest. They had some of the usual forbidding habits natural to savage life; but he adds, "they appeared to live, as it were, on a good understanding with the birds and beasts, or as if forming part and parcel of the surrounding animal creation: a point in correspondence with an idea previously entertained that the Mongolian has peculiar qualifications for reclaiming, or reducing animals to the domestic state." But all was strange, wild, and savage. The broad continent lay between those Pacific coasts and the seats of civilisation on its eastern shores; and standing in the midst of a temporary Indian encampment, and surrounded by all the rude details of savage life, he exclaims: "Scarcely two centuries ago, our New England shores presented only scenes like that before me; and what is to be the result of the lapse of the third?" A quarter of a century has passed since then. The town of Victoria is rising on Vancouver's Island, that of New Westminster in British Columbia; and the *British Colonist*, the *New Westminster Times*, and other broadsheets of the North Pacific coast already tell of the printing-press in full operation, where so recently the Indian trail and the rude wigwam of the savage were the sole evidences of the presence of man. The mineral wealth of Fraser's River has attracted thousands to the new province. The clearing, the farm, and the industrious settlement, have displaced the ephemeral lodges of the Indian; and are rapidly superseding the no less ephemeral shanties of the gold diggings. The Customs' receipts of the colony of British Columbia for the year 1860 exceeded £32,000; for 1864 they were estimated at nearly £80,000 sterling; and the proceeds are being chiefly expended on public works.

The progress of a single year outspeeds the work of past centuries. Amid the charred stumps and the rough clearings of the young settlement, fancy traces, not obscurely, the foundations of future states and empires, and the ports of the merchant navies of the Pacific destined to unite America to Asia, as America has been united to Europe. Already the indomitable enterprise of the intruding races has planned the route of overland travel, and even now railways are stretching westward towards the Rocky Mountains. Explorers are surveying their defiles for the fittest passage, through which to guide the snorting steam-horse and all the wonderful appliances by which the triumphs of modern civilisation are achieved. If such victories were only to be obtained, like those of the first Spanish colonists of the New World, by the merciless extermination

of the Indian occupants of the soil, it would be vain to hope for the endurance of states or empires thus founded in iniquity; but if, by the intrusion of the vigorous races of Europe, smiling farms and busy marts are to take the place of the tangled trail of the hunter and the wigwam of the savage; and the millions of a populous continent, with the arts and letters, the matured policy, and the ennobling impulses of free states, are to replace scattered tribes living on in aimless, unprogressive strife: even the most sensitive philanthropist may learn to look with resignation, if not with complacency, on the peaceful absorption and extinction of races who accomplish so imperfectly every object of man's being. If the survivors can be protected against personal wrong; and, so far as wise policy and a generous statesmanship can accomplish it, the Indian be admitted to an equal share with the intruding colonizer, in the advantages of progressive civilisation: then we may look with satisfaction on the close of that long night of the Western World, in which it has given birth to no science, no philosophy, no moral teaching that has endured; and hail the dawn of centuries in which the states and empires of the West are to bear their part in the accelerated progress of the human race.

CHAPTER XXIV.

MIGRATIONS.

AMERICAN ETHNOLOGY—AMERICAN MONOSYLLABIC ROOTS—SYNTHETIC ELEMENT OF LANGUAGE—ANALOGIES TO ASIATIC LANGUAGES—SOURCES OF POPULATION—PECULIAR GENDER IN LANGUAGE—INDICATIONS OF MIGRATIONS—SAMOYED AFFINITIES—CURRENTS OF MIGRATION—ESQUIMAUX TRADITIONS—THE FINNIC HYPOTHESIS—TRACES OF MEXICAN INFLUENCE—PURITY OF RACE—INTELLECTUAL INTERCHANGES—GUESSES AT TRUTH.

WHENCESOEVER the man of the New World is derived, enough has been produced to show that he is no recent intruder there. In the amplest sense of the term, we are able to trace out many glimpses of him in prehistoric eras, replete with illustrative significance in reference to the whole human race; and in some respects, America, in its present condition of native, intruded, and hybrid races, offers a field of study to the ethnologist, surpassing in value anything to be found elsewhere. Its ethnology is simpler than that of Europe or Asia. Its native and its intruded races are clearly defined and well-determined; and its languages stand apart alike from the dead and the living tongues of the Ancient World.

This simplicity, however, may be more apparent than real. Our knowledge of history prevents our under-estimating Pelasgian or Etruscan, Basque, Magyar, or Celtic elements of diversity. Ignorance may be the cause of our overlooking or under-estimating diversities among American languages as great as the German and Euskara, or the Sanscrit and the Chinese. America, indeed, appears to have its monosyllabic Otomi and Mazahui, with their analogies to the Chinese, and their seemingly radical contrast to that polysynthetic structure which appears to be as predominant throughout the New World as Aryan affinities are characteristic of the languages of Europe. But we scarcely know yet how justly to

estimate the amount of difference. Schoolcraft affirms, as the result of his analysis of the Algonquin dialects, that they betray evidence of having been built up from monosyllabic roots. If this be indeed demonstrable in any other than the vague sense in which it may be stated of every tongue, the same conclusion will apply to other American languages. Nearly all the Chippewa root-words, he observes, are of one or two syllables; and Gallatin has shown that the same may be affirmed to a great extent of the Mexican, if the pronominal adjuncts and the constantly recurring terminations are detached from the radix. But the polysyllabic characteristics of the Algonquin exceed even those of the Esquimaux. Holophrasms are common in all its dialects, compounded of a number of articulations, each of which is one of the syllables of a distinct word; and the whole undergoes grammatical changes as a verbal unit. This, therefore, is a condition widely diverse from that of the monosyllabic languages, even where, as in the Otomi, many compounded words occur in the vocabulary. But after making every allowance for unknown nations and tongues, and misinterpreted or unappreciated elements of difference among the varieties of man in the New World, the range of variation appears to extend over a smaller scale than that of Europe or Asia, or even of Africa; while he is everywhere found there under less diversified modifications of civilized or savage life than on the old historic continents.

The original centres of population may have been manifold; for the evidence of the lengthened period of man's presence in America furnishes abundant time for such operations of climatic influences, direct or indirect intercourse, or even positive intermixture, to break down strongly-marked elements of ethnic diversity. Nevertheless, after carefully weighing the various kinds of evidence which have been glanced at in previous chapters, they all seem to resolve themselves into three great centres of propagation, of which the oldest and most influential belongs to the southern and not to the northern continent. The routes originally pursued in such immigrations may have been various, and it is far from impossible that both southern and northern immigrants entered the continent by the same access. Such, however, is not the conclusion to which the previous investigations appear to me to point. If we adopt the most favoured theory, that the New World has been entirely peopled from Asia, through Behring Straits, then the Patagonian should be among the oldest, and the Esquimaux the most recent of its immigrant occupants. But that which seems theoretically the

easiest is by no means necessarily the most probable course of migration; and many slight indications combine to suggest the hypothesis of a peopling of South America from Asia, through the islands of the Pacific.

The tendency of philological inquiry, as directed to the peculiar grammatical structure and extreme glossarial diversities of the American languages, was at first to exaggerate their special phenomena into widely prevalent linguistic features, common to the New World and utterly unknown elsewhere. In this the philologist pursued the same course as the physiologist, the attention of each being naturally attracted chiefly by what was dissimilar to all that had been observed elsewhere. But as physiological disclosures prove less conclusive in the support they yield to the favourite theory of an essential diversity for the American man; so also increasing knowledge of his languages tends to diminish the proofs of that radical difference from all other forms of human speech which was at first too hastily assumed. The synthetic element of structure, though very remarkable in the extent of its development, has many analogies in ancient languages, and is embraced in the grammatical process of all inflectional tongues. But beyond this, important elements of relationship appear to be traceable between languages of America and those of the Polynesian family. Gallatin early drew attention to certain analogies in the structure of Polynesian and American languages as deserving of further investigation; and pointed out the peculiar mode of expressing the tense, mood, and voice of the verb, by affixed particles, and the value given to place over time, as indicated in the predominant locative verbal form. The substitution of affixed particles for inflections, especially in expressing the direction of the action in relation to the speaker, is common to the Polynesian and the Oregon languages, and also has analogies in the Cherokee.[1] Subsequent observations, though very partially prosecuted, have tended to confirm this idea, especially in relation to the languages of South America, as shown in their mode of expressing the tense of the verb; in the formation of causative, reciprocal, potential, and locative verbs by affixes; and the general system of compounded word structure. The incorporation of the particle with the verbal root appears to embody the germ of the more comprehensive American holophrasms. But here again, while seeming to recover links between Polynesia and South America, we come on the track of affinities no less clearly Asiatic. Striking

[1] *American Ethnological Transactions*, vol. ii. p. cliv.

analogies have been recognised between the languages of the Deccan and those of the Polynesian group, in which the determinate significance of the formative particles on the verbal root equally admits of comparison with peculiarities of the American languages. On this subject the Rev. Richard Garnett remarks that most of the languages of the American continent respecting which definite information has been acquired, bear a general analogy alike to the Polynesian family and the languages of the Deccan, in their methods of distinguishing the various modifications of time; and he adds: "We may venture to assert in general terms that a South American verb is constructed precisely on the same principle as those in the Tamul and other languages of Southern India; consisting, like them, of a verbal root, a second element defining the time of the action, and a third denoting the subject or person."[1] Such indications of philological relation of the islands of the Polynesian archipelago and the American continent to Southern Asia, acquire an additional interest when taken in connexion with remarkable traces of megalithic sculpture and of ancient stone structures in the Pacific, long ago noted by Captain Beechey on some of the islands nearest to the coasts of Chili and Peru, and more recently observed on Bonabe and other islands lying off the Asiatic shores. Some of those have already been referred to in their general bearings on oceanic migration, and on the probability of an era of insular civilisation, during which maritime enterprise may have been carried out on a scale unknown to the most adventurous of modern Malay navigators.

The affinities recognisable between Polynesian and American arts manifestly belong to a remote past; and the character of such philological relations as have been indicated fully accord with this. The direct relationship of existing Polynesian languages is not Mongol but Malay; and this is for the most part so well defined as to indicate migrations from the Asiatic continent to the islands of the Pacific at periods comparatively recent; whereas the diversity of those of America, and their essentially native vocabularies, prove that the latter have been in process of development from a remote period free from all contact with tongues, which, as we see, were still modelling themselves according to the same plan of thought in the clustering islands of the Pacific. But the American languages present a widely diversified field of study scarcely yet fairly entered upon; while their peculiar complexities, when considered in relation

[1] *Proceedings of the Philological Society*, vol. i. p. 271.

to nations broken up into numerous unlettered and nomade tribes, and with no predominant central nationality, seem to afford such facilities for ever-changing combinations, that the difficulty of determining their radical elements is greatly increased in any attempt to compare their old and modern forms. Two languages, however, seem to invite special study, in addition to that of Mexico. The Maya, which presents striking contrasts to it in its soft, vocalic forms, has already been referred to as that to which we are attracted by some apparent relations to the remarkable antiquities, and the possible surviving civilisation, of Central America; while the Quichua was the classical language of South America, the richly-varied and comprehensive tongue, wherein, according to its older historians, the poets of Peru incorporated the national legends, and which the Incas vainly strove to make not only the Court language, but the medium of all official intercourse, and the common speech of their extended empire.

From some one of the early centres of South American population, planted on the Pacific coasts by Polynesian or other migration, and nursed in the neighbouring valleys of the Andes in remote prehistoric times, the predominant southern race diffused itself, or extended its influence through many ramifications. It spread northward beyond the Isthmus, expanded throughout the peninsular region of Central America, and after occupying for a time the Mexican plateau, it overflowed along either side of the great mountain chain, reaching towards the northern latitudes of the Pacific, and extending inland to the east of the Rocky Mountains, through the great valley watered by the Mississippi and its tributaries. It must not, however, be supposed that such a hypothesis of migration implies the literal diffusion of a single people from one geographical centre. There is just as little reason for designating either the Toltecs or the Mound-Builders Peruvians, as for calling the Iranian Indo-Germans Greeks. But many archæological traces seem to indicate just such affinities between the former as have been suggested by the philological relations of the latter.

Thus far we have chiefly regarded the traces of oceanic migration by the southern Pacific route. But, while its island groups appear to furnish facilities for such a transfer of population to the New World as evidence of various kinds tends to confirm: it seems scarcely to admit of doubt that the Canary Islands were known to the ancients; and that by Madeira and the Azores, on the one hand, and by the Cape Verde Islands, on the other, the Antilles and Brazil

may have become centres of diverse ethnological elements, and also of distinctive arts and customs of the western hemisphere. The Carib race, which was the predominant one in the Lesser Antilles, and occupied extensive regions of the mainland toward the southern Atlantic seaboard, differed very strikingly, alike in mental and physical characteristics, from the races of Central and of North America, and still more so from those with whom they came in contact in the larger islands. Traces of words common to the Colfachi of Florida and the insular Caribs are probably the sole grounds for the tradition of a North American origin for the latter; though in cranial conformation their analogies are with the northern dolichocephalic nations. Greatly more interesting is the fact that, while their continental habitat belongs to the southern and not to the northern hemisphere, they also disclose Polynesian affinities in language and customs. Dr. Latham remarks in his *Varieties of Man:* "In the ethnography of Polynesia certain peculiar customs in respect to the language of caste and ceremony were noted. The Carib has long been known to exhibit a remarkable peculiarity in this respect. The current statement is that the women have one language and the men another. The real fact is less extraordinary. Certain objects have two names; one of which is applied by males, the other by females only." The explanation offered attempts to trace the female terms to the language of the Arawaks, the older inhabitants of the islands, the males among whom are assumed to have been exterminated, and the women adopted by the conquering Caribs as wives. But such an admixture of races has occurred in every age of the world, with no such results; and the theory very unsatisfactorily accounts for a philological phenomenon by no means limited to the Carib among the languages of America.

In our modern English language grammatical gender has to a great extent disappeared; in the ancient Saxon, as in the Latin, it affected noun, pronoun, and adjective, and modified them through all their declensions; in the linguistic feature thus found common to certain Polynesian and South American languages, gender is carried to the utmost extent, and not only modifies the forms of speech applicable to the sexes, but those in use by them. It is in this direction that the peculiarities analogous to true gender have been developed in widely different American languages. The general mode of expressing sex for the lower animals, alike among the northern Indians, and in the languages of Mexico and Central

America, is only by prefixing another noun to their names, equivalent to our use of "male" and "female," or "he" and "she." But the employment of distinct terms expressive of difference of sex in the human species is carried to an extent unknown in ancient or modern European languages; and separate adjectives are employed to express qualities, such as size, form, proportion, etc., from those which define the same attributes of inanimate objects, and even of the lower animals. In closing his analysis of the Huasteca language, along with others spoken in Central America, Gallatin remarks on an abbreviated mode of speech noted by Father Tapia Zenteno as in use by the women, and adds, "Here, as amongst all the other Indian nations, the names by which they express the various degrees of kindred differ from those used by men."

The cranial affinities of the Caribs have already been referred to. They are essentially dolichocephalic; and the predominance of such configuration throughout the American Archipelago has been made the basis of important ethnological deductions. Retzius especially has recorded the opinion that, while he conceives the Tongusian skull to form a clearly recognised link between those of the Chinese and the Esquimaux; the other primitive dolichocephali of America are nearly related to the Guanches of the Canary Islands, and to the populations of Africa, comprised by Dr. Latham under subdivisions of his Atlantidæ. The migrations which such affinities would indicate have already been referred to as altogether consistent with the probabilities suggested by the course of ancient navigation; and if early Mediterranean voyagers found the Antilles uninhabited, the genial climate and abundant natural resources of those islands peculiarly adapted them as nurseries of such germs of colonization for the neighbouring continent.

But independent of all real or hypothetical ramifications from southern or insular offsets of oceanic migration, some analogies confirm the probability of a portion of the North American stock having entered the continent from Asia by Behring Straits or the Aleutian Islands; and more probably by the latter than the former: for it is the climate that constitutes the real barrier. The intervening sea is no impediment. In a southern latitude, such a narrow passage as Behring Straits would have been little more interruption to migration than the Bosporus between Asia and Europe; and in its own latitude it is annually bridged by the very power that guards it from common use as a highway of the nations, and is thus placed within easy command of any Samoyed or Kam-

tchatkan sleighing party. It is, indeed, a well-authenticated fact, that the Russians had learned from native Siberians of a great continent lying to the east of Kamtchatka, long before Vitus Behring demonstrated that the western and eastern hemispheres so nearly approach, that the grand triumph of Columbus could be performed by the rudest Namollo in his frail canoe.

In this direction, then, a North American germ of population may have entered the continent from Asia, diffused itself over the North-west, and ultimately reached the valleys of the Mississippi, and penetrated to southern latitudes by a route to the east of the Rocky Mountains. Many centuries may have intervened between the first immigration, and its coming in contact with races of the southern continent; and philological and other evidence indicates that if such a north-western immigration be really demonstrable, it is one of very ancient date. But so far as I have been able to study the evidence, much of that hitherto adduced appears to point the other way; and while, theoretically, the northern passage seems so easy, yet so far as any direct proof goes, the Polynesian entrance into the southern continent, across the wide barrier of the Pacific, is the one most readily sustained.

Mr. Lewis K. Daa, a learned Norwegian, has traced certain curious affinities between the Samoyed languages of Northern Asia and some of those of America; and through the other dialects of Siberia, and the relations of both to those of the Finnic and Altaic stock, completes, as he conceives, a chain of connexion, eastward from North Cape to Behring Straits, and thence to the related American stocks beyond the Pacific. But the comparison is chiefly based on a parallelism of vocabularies, and not on any reappearance of the peculiar constructive elements of the American languages. It does not, therefore, lead us very far; for the determination of the true form of the radical, for the purpose of useful comparison, in the unwritten languages of nomade tribes, is exceedingly difficult. But it does furnish some guidance, though not, as I conceive, in the direction its author imagines. He has demonstrated, as he believes, certain Asiatic affinities in the Athabaskan and Dakota tongues; and has shown a series of suggestive similarities between words in the Asiatic and North American languages, relating to primitive arts, customs, and the rudimentary terms of religious belief. These include *God, priest, slave, dog, fire, metal, copper, knife, axe, awl, boat, house, tent, village, door, bag, spin:* terms for the most part relating to arts, institutions, and opinions, common to

the rudest tribes of Asia and America. Following out the idea founded on such evidence, Mr. Daa is disposed to trace the entire peopling of the western hemisphere to successive waves of migration flowing on in a continuous stream across Behring Straits, and he pushes his theory far beyond its legitimate bearings by affirming: "that the lowest savages, unacquainted with houses and garments, are found in South America only, in Brazil and Guyana, farthest off from Asia; and that the fishing tribes that border the Arctic and Pacific Oceans, from Labrador to Oregon—the Esquimaux, the Athabaskans, and their kindred,—being in the closest contact with Asia, are also the most improved, if we take into account their hard climate."[1] "Does not this," he asks, "point out the beginning and the end of the immigration?" But, in so far as any such difference really exists, it is altogether the product of climate, and furnishes no gauge of the relative age of nations. Whatever may have been the original direction of the current of migration, such evidence as philological comparisons with Northern Asia reveal, when viewed along with the more comprehensive analogies to Southern Asia, appears to point rather to the ebb than the flow of such a tide, and discloses elements contributed by America to the older world of Asia. It is worthy of notice, in connexion with this view of the subject, that Charlevoix, in his essay on the Origin of the Indians, states that Père Grellon, one of the French Jesuit Fathers, met a Huron woman on the plains of Tartary, who had been sold from tribe to tribe, until she had passed from Behring Straits into Central Asia. By such intercourse as this incident illustrates, it is not difficult to conceive of some intermixture of vocabularies; and that such migration has taken place to a considerable extent is proved by the intimate affinities between the tribes on both sides of the Straits.

The Esquimaux occupy a very remarkable position as a double link between America and Asia. Extending as they do in their detached and wandering tribes across the whole continent, from Greenland to Behring Straits, they appear, nevertheless, as the occupants of a diminishing rather than an expanding area. When the first authenticated immigration from Europe to America took place in the eleventh century, it was with the Esquimaux that the Scandinavians of Greenland, and apparently even the discoverers of Vinland, were brought in contact. If the Scraelings of New Eng-

[1] *Transactions of the Philological Society*, 1856, p. 293.

land at that comparatively recent date were indeed Esquimaux, it is the clearest evidence we have of the recent intrusion of the Red Indians there. When the sites of the ancient Norse colonies of Greenland were rediscovered and visited by the Danes, they imagined they could recognise in the physiognomy of some of the Esquimaux who still people the inhospitable shores of Davis Straits, traces of admixture between the old native and Scandinavian or Icelandic blood. Of the Greenland colonies the Esquimaux had perpetuated many traditions, referring to the colonists under the native name of *Kablunet*. But of the old European language that had been spoken among them for centuries, the fact is a highly significant one that the word *Kona*, used by them as a synonym for woman, is the only clearly-recognised trace. But the Esquimaux, who thus took so sparingly from the languages of the old world, have contributed in a remarkable manner to them. The Tschuktchi, on the Asiatic side of Behring Straits, speak dialects of the Arctic American language. The Alaskan and the Tshugazzi peninsulas are peopled by Esquimaux; the Konegan of Kudjak island belong to the same stock; and all the dialects spoken in the Aleutian Islands, the supposed highway from Asia to America, betray in like manner the closest affinities to the Arctic Mongolidæ of the New World. Their languages are not only undoubted contributions from America to Asia, but they are of recent origin, as compared with the traces of relationship between those of the western hemisphere and the languages of Asia to which the latter bear any analogy. This is shown by the close affinities between the Esquimaux dialects of both continents, when contrasted with any recognisable evidence of some mutual but remote relationship, by which the Samoyede and the Finn are linked to the nations of the New World. Of such links, some of the most important art-words, such as *fire, metal, copper, tools,* under their various forms, *boat,* and *house* or *temple,* have already been discussed in their relation to the growth of indigenous American arts. In respect to those, America had more to give than to borrow from the hyperborean Asiatics. With Asiatic Esquimaux thus distributed along the coast adjacent to the dividing sea; and the islands of the whole Aleutian group in the occupation of the same remarkable stock common to both hemispheres: the only clearly recognisable indications are those of a current of migration setting towards the continent of Asia, the full influence of which may prove to have been greatly more comprehensive than has hitherto been imagined possible.

While thus groping our way after remote ethnic and philological genealogies, it may be worth recalling, that, along with older and more obscure traces of linguistic affinities which lie beyond and within the discontinuous Ugrian area: analogies with the polysynthetic element of the American languages have been long sought in the peculiar agglutinate characteristics of the Euskara or Basque. It would be a remarkable and most unlooked for result of the ingenious hypothesis of Arndt and Rask, if it were found to resolve itself into ancient tide-marks of two great waves of population: the one the broad stream of Indo-European migration setting north-westward towards the shores of the Atlantic, and the other an overflow from the western hemisphere, also setting westward, but in those higher latitudes of which history has taken no account, and only coming within the range of observation as it breaks and disperses in the shock of collision with the world's later historic stock. Yet such is not utterly improbable. The shores of the Indian Ocean were doubtless reached by an early wave of aboriginal population. Prof. H. H. Wilson points out in his edition of the *Rig Veda Sanhita*, as specially worthy of notice, that at the remote epoch of the earliest of the Vedas, the Aryan Asiatics were already a maritime and mercantile people. With the development of skill and enterprise, maritime wanderers must have speedily passed over into the nearer island groups. From thence to the remoter islands was as easy at an early as at any later date; and a glance at a hydrographic chart of the Pacific will show that a boat, driven a few degrees to the south of Pitcairn, Easter, or the Austral Islands, would come within the range of the Antarctic drift current, which sets directly towards the Chili and Peruvian coasts. It is, moreover, among the eastermost of those Polynesian islands that Captain Beechey noted the occurrence of colossal statues on platforms of hewn stone, or frequently fallen and mutilated: objects of vague wonder only, and not of worship, to the present inhabitants, who appear to be incapable of such workmanship. Similar sculptures, indeed, were observed on other islands, now uninhabited, and many traces indicate an ancient history altogether distinct from that of the later island races. Wanderers by the oceanic route to the New World may therefore have begun the peopling of South America long before the north-eastern latitudes of Asia received the first nomades into their inhospitable steppes, and opened up a way to the narrow passage of the North Pacific. At any rate, the north-eastern movement of the tide of migration, and its overflow

into America, have been too absolutely assumed as the chief or sole means by which the New World could be peopled from an Asiatic centre.

In other respects also the tendency has been to read the record backwards. Among the Atnahs, Chinooks, Nasquallies, and other tribes on the Oregon coast, the uncouth clicking sounds, equally harsh and undefined to European ears, resolve themselves, when reduced to writing, into the *tli*, *txl*, *atl*, *iztli*, and *yotl*, of the most characteristic Mexican terminations. But looking at such traces as analogous to one of the old Mexican migration-pictures, the important question is, What is the direction of the footprints? Do they reveal the trail of the advancing Mexicans as tracks left behind them on their way towards the plateau of Anahuac, or are they the mere reflex traces of later and indirect Mexican influence? The latter I conceive to be most probable by all just estimate of the very partial nature of the traces. And yet they are curiously suggestive, and full of interest, affecting as they do both the languages and arts of the North-west. In this direction, however, while facilities for intercourse between America and Asia are obvious enough, the only well-defined indications of their use are by those hyperborean nomades who have sought a new home in old Asia.

But confining our view to the American continent, the north and south tropics were the centres of two distinct and seemingly independent manifestations of native development; and many points of contrast between them tend to confirm the idea of intimate relations between the immature north and such matured progress as Mexican civilisation had achieved. But also this idea receives confirmation from equally clear indications of an overlapping of two or more distinct migratory trails leading from opposite points. The ebb and flow of the northern and southern waves of migration within the area of the northern continent have left many tidal marks, with evidence of some interchange of arts, and a considerable admixture of blood. These have already been sufficiently referred to in considering the physical and intellectual characteristics of the Mound-Builders. But this further may be admissible here in the form of suggestive hypothesis. The dolichocephalic form of cranium predominates among the northern tribes, as well as the Esquimaux. That of the Mound-Builders appears to have been very markedly brachycephalic. The tribes lying between the country of the Mound-Builders and Mexico pre-

sented an intermediate type, and were superior in artistic skill to the northern nations. May it not be that we have here traces of an irruption of northern barbarians on the semi-civilized Mound-Builders, an extermination of the males, an extensive intermarriage with the females, and the usual results, of which the history of European nations furnishes many illustrations?

The Central American civilisation, the most matured of all to which the New World gave birth, was, I conceive, mainly of southern origin. Much that pertained to Mexican arts and polity was still more clearly derived from the north. But there are also evidences of mutual interchange. It must be borne in remembrance that we have in reality no such thing as a pure race among the historic nations of the old world. Admixture, not purity, seems the essential element of progress. The Greeks were no pure race, still less were the Romans; and neither are the Spaniards, the French, the English, nor the Anglo-Americans. If we want pure, that is, unmixed blood, we must seek it in the hut of the Finn, the tent of the Arab, or for the New World in the Indian wigwam. There is abundant evidence that the races of Peru, Yucatan, and Anahuac were the products of great intermixture: it may have been of closely allied races, but also, and more probably, of widely diverse ones. In Central America especially we are tempted to conceive of the possible meeting of immature South American civilisation with that which an essentially distinct migration had borne across the Atlantic: it may be, in accordance with the fondly-cherished dream of the modern American, while yet the fleets of Tyre and Carthage passed fearlessly beyond the Pillars of Hercules into the great engirdling ocean of their ancient world. Here, at any rate, are such indications of intermixture and interchange as investigation helps us to recover. South America had her immature picture-writing, her sculptured chronicles or basso-relievos, her mimetic pottery, her defined symbolism and associated ideas of colours, and her quipus. North America had her astronomical science, her more developed though crude picture-writing, her totems, pipe-sculpture, and wampum; and her older Mound-Builders, with their standards seemingly of weight as well as of mensuration. Each had a nearly equally developed metallurgy. In Central America we seem to look on the mart of intellectual interchange, and the centre towards which all elements of progress converge into the grand product of that native civilisation still so

wonderful in its ruins. The idea may be intelligibly presented to the eye thus:—

South America.	North America.
The Quipu.	The Wampum.
Bas-relief Chroniclings.	The Totem.
Mimetic Pottery.	Picture-writing.
Metallurgic Art.	Mimetic Pipe-sculpture.
Agricultural Science.	Metallurgic Art.
Beasts of Burden.	Geometrical Mensuration.
The Balance.	Metallic Currency.
Peruvian Azimuths.	The Astronomical Calendar.

Central America.

Architecture.
Fictile Art.
Portrait-sculpture.
Hieroglyphics.
Numerals.
Letters.

To the characteristics thus distributed among the more civilized nations of the New World, have to be added that strange custom of cranial deformation, ancient Asiatic as well as American, and not unknown to the islanders of the Pacific. It is common to nations north and south of the Isthmus of Panama, yet seemingly more truly indigenous to the southern than the northern continent; and it seems fully more probable that it was derived by the Asiatic Macrocephali, than originally contributed from their Eastern steppes to the prairies and forests of what we style the New World.

The idea which harmonizes best with the varied though still imperfect evidence thus glanced at, when viewed in connexion with a supposed Asiatic cradle-land, conceives the earliest current of population destined for the New World to have spread through the islands of the Pacific, and to have reached the South American continent long before an excess of Asiatic population had diffused itself into its own inhospitable northern steppes. By an Atlantic oceanic migration, another wave of population occupied the Canaries, Madeira, and the Azores, and so passed to the Antilles, Central America, and probably by the Cape Verdes, or, guided by the more southern equatorial current, to Brazil. Latest of all, Behring Straits and the North Pacific Islands may have become the highway for a northern migration by which certain striking diversities

of nations of the northern continent, including the conquerors of the Mexican plateau, are most easily accounted for. But of this last, especially, the evidence is chiefly inferential; and the more obvious traces rather indicate the same current which set from Southern Asia to the Pacific shores of South America, moving onward till it overflowed by Behring Straits and the Aleutian Islands, into the continent from whence it was originally derived.

But such are only guesses at truth, suggestive it may be of definite views, and permissible in gathering up the last stray links of such accumulated, though still very imperfect evidence; but not to be confounded with its obvious teachings. One other subject, more comprehensive than the migrations of the human race, and surrounded with still greater difficulties, is the question of its antiquity. On that, also, fresh glimpses of truths undreamt of till now, tempt a revision of long cherished opinions, and compel the student of science to harmonize anew knowledge and faith, as things which, if both founded in truth, must repose on a common foundation.

CHAPTER XXV.

THE AGE OF REASON.

RECEIVED CHRONOLOGY—THE AMERICAN AND ASIATIC MAN—DARWIN'S SPECULATIONS—MULTIPLICATION OF SPECIES—LANGUAGE—DEVELOPMENT OF LANGUAGES—DOMESTICATION OF ANIMALS—ORIGIN OF CIVILISATION—AGRICULTURE—LETTERS AND NUMERALS—APPRECIATION OF NUMBER—IDEA OF ABSTRACT NUMBERS—SOLAR TIME—ASTRONOMY—PRIMITIVE CALENDARS—DIFFICULTIES UNSOLVED—VALUE OF TIME.

THAT man has everywhere preceded history is a self-evident truth. But so long as no scientific disclosure appeared to conflict with received chronology, we have continued to accept unchallenged an assumed determination of his age, long after all were agreed in rejecting it in reference to the earth as the theatre of his history. But the discoveries of recent years bearing on the antiquity of the human race, chiefly derived from ossiferous caves and the gravel deposits of a past geological period, compel us to reconsider the grounds of our belief. The so-called New World we have found abundant reason for believing to be old, even in relation to its aboriginal occupants; yet not necessarily so old as to conflict with the history of what is called the Ancient World. For the prehistoric man treated of in the foregoing pages, belongs for the most part to less remote ages than those assigned to the Drift-Folk and the Troglodytes of "quaternary" centuries.

Confining myself mainly to portions of this comprehensive subject on which opportunities of a special character seemed to afford me the means of throwing some fresh light: I have discussed, in previous chapters, the relations of the Red man to other varieties of the human family; and the results of both voluntary and enforced migrations of European and African races to another hemisphere, where they have been subjected for upwards of two centuries to

many of the most influential causes assumed as contributing elsewhere, and in earlier ages, to the development of ethnical varieties, out of a common stock.

In thus reviewing the disclosures of American archæology and ethnology, and their bearing on the general question of the origin and progress of man, the inquiry has been pursued with an honest desire to arrive at an impartial decision. But the determination of the relations which the Red man of America bears to the European or Asiatic man involves such important results, that this very fact has helped to impede the progress of truth. The assailant has, perhaps, felt emboldened at times by the very gravity of the issues imperilled by his attack; while the adherents to a faith in the all-comprehensive brotherhood of man, have rather entrenched themselves in their own strongholds than fairly met their opponents on the open field of scientific inquiry. Scientific truths, whatever be the interests they involve, can only be determined on scientific grounds; and on such only has any attempt been made to base them in this work. The subject presented itself in novel aspects: the results, whatever they should prove to be, were welcome, since I had no preconceived theory at stake; but, as it has expanded before me, accumulating evidence has tended more and more to detract from the seductive temptations of novel and seemingly simple hypotheses, which commend themselves by their apparent solution of difficulties. It is little more than three and a half centuries since the men of the Old and the New World met face to face. For unknown ages before that America had been a world within herself, with nations, languages, arts, and civilisation all her own; and the whole tendency of that later American science, which also claims to be native, though the product of a race of European descent, has been to make of the Red man a distinct race and species. But one result of the inquiry pursued in previous chapters has been to satisfy me that there is, at least, no necessity for separating the American from the Asiatic man. On the contrary, greater difficulties have to be met when we proceed to compare tribes and nations of the Asiatic continent, than any that interfere with our acceptance of the dogma that the Mongols of Asia and America are one.

In the ingenious speculations on the origin of species by which Mr. Darwin has startled the scientific world, he remarks, as he draws his first abstract to a close: "The whole history of the world, as at present known although of a length quite incomprehensible

by us, will hereafter be recognised as a mere fragment of time, compared with the ages which have elapsed since the first creature, the progenitor of innumerable extinct and living descendants, was created. In the distant future I see open fields for far more important researches. Psychology will be based on a new foundation, that of the necessary acquirement of each mental power and capacity by gradation. Light will be thrown on the origin of man and his history." Already these speculations have done good service to the ethnologist. They will not, indeed, persuade him that the universe is a product of measured force and motion, within which this earth-planet has gone cycling on according to fixed laws, until, from the simplest monad or life-germ, endless forms of wonder and beauty have been developed, closing at length with the evolution of man, as its latest and crowning work; but they may give strength to the persuasion of many, that time and external influences supply the requisite elements for the evolution of varying tribes of mankind from a common stock; and so make us welcome every legitimate augmentation of the duration of the human race.

Mr. Darwin has not succeeded, in the whole course of his ingenious argument, though returning to it again and again, in tracing the slightest indications of that favourite illustration of the instability of species, the pigeon, being developed out of any essentially distinct form. But he has shown that pigeons have been subjected to the influences of domestication and of civilisation for thousands of years; that one of the most favourable circumstances for their production of distinct breeds is to be traced to the fact, that male and female pigeons can be easily mated for life; and that they have been found capable of domestication alike in Northern Europe, in Egypt, and in Southern India. Selecting some of the greatest of known extremes within the natural family of *Columbidæ* subjected to such influences, he remarks: "Although an English carrier or short-faced tumbler differs immensely in certain characters from the rock-pigeon, yet, by comparing the several sub-breeds of these breeds, more especially those brought from distant countries, we can make an almost perfect series between the extremes of structure."

In so far as those are well-accredited facts, they furnish interesting analogies readily applicable to the so-called races of men. It is easy to classify the human family as Blumenbach has done; nor is it difficult to select an example of each division presenting very striking elements of contrast to all the others. But, mean-

while, research tends ever more to the multiplication of such species. Pickering makes eleven; Borey de St. Vincent, fifteen; and Gliddon and Nott, following out the idea of Agassiz as to the correspondence of diverse species of man with the geographical areas of the animal creation, divide the globe into eight zoological realms, through which they distribute their human fauna under forty-three different heads. It is by no means apparent that even this is a sufficiently liberal apportionment to exhaust the requirements for such primary human species; but, meanwhile, as they multiply, the elements of diversity diminish. The intervals between seemingly primary typical forms are rapidly filled up. Instead of isolated and diverse types, we have a nearly continuous chain, passing by slightly varying links from one to the other; and here once more we realize what Darwin has observed of the *Columbidæ*, that we can make an almost perfect series between the extremes of structure.

It may, perhaps, be legitimately objected that some of the problems most strenuously forced on the notice of the ethnologist at the present time, lie beyond the province of science. It cannot certainly establish the unity of the human race, the source of its origin, or the term of its existence. Nevertheless, it may contribute confirmatory evidence for those who have already accepted, on higher authority than scientific induction, the story of Edenic creation, and of the division of the earth among the descendants of a common stock. Some of the grounds of such confirmation, in so far as they are suggested by the present course of inquiry, have already been noticed, and may here be recapitulated under their different heads, in drawing the argument to a close.

And first, of LANGUAGE. To those who can accept of a theory which would make man the mere latest development of the same life-germ out of which all organic being has been evolved by a process of natural selection, it is as difficult to place limits to his possible existence, as to determine where the ape or the faun ended and man began. But to those who still believe that God made man in his own image, the limits which must be assigned to the existence of the race lie within moderate, if undefined bounds. We are as yet only on the threshold of philological disclosures; but the tendency of all investigation into the analogies discernible in the structure of ancient and modern, of living and dead languages, points towards the discovery of relations, heretofore undreamt of, even between languages seemingly most dissimilar. Iceland, we

know, was colonized by Northmen in the ninth century, and has ever since been in the occupation of a people of Scandinavian descent, and speaking and writing a language which in that ninth century was common to them and to the occupants of the European fatherland. But during the intervening centuries the Icelander has been isolated, and to a great extent excluded from intercourse with any other race; while the Dane has bordered on Germany, and been carrying on intimate commercial and diplomatic relations with the other nations of Europe. Hence the slight change of the Icelandic tongue, compared with that wrought on the Danish in the same period, during which the dialects of the Scandinavian colonies, provinces, and kingdoms have been developed into separate and mutually unintelligible languages. Here, then, we have some clue to the causes and rate of development of the dialects of a common language into separate tongues. But in the same ninth century the Northmen acquired and colonized the region of Northern France, ever since known as Normandy, and there, instead of creating a new offshoot from the common mother-tongue, they adopted the Romance dialect of the district, and made of it the vehicle of the most remarkable and influential literature of mediæval Europe. There were then already in independent though immature existence seven Romance dialects: the Italian, Wallachian, Rhetian, Provençal, Spanish, Portuguese, and French, all acknowledging their descent from a common mother-tongue, within an era so recent as the decline of the Roman Empire. But the Latin itself is no primary root-language, but bears within its vocabulary and grammatical structure as unmistakable evidences of a derived and composite character, as any mass of conglomerate does to the geologist; and as the philologist pursues his investigations, it becomes apparent to him that not only the Latin and Greek, the Germanic, Scandinavian, and Slavonic, but also the Zend, Sanscrit, and Celtic tongues, all embody modifications of some antecedent parent language. So also scattered members of the Semitic group have been gathered up towards a common centre; and the influence of Mohammedan aggression within comparatively modern times, is seen to have done for the Arabic what the ambition of Imperial Rome did for the Latin. The affinities of other languages of Asia and Africa, of the Australasian archipelago, and of America, are as yet very partially determined; but many glimpses of analogous truths are already discernible; and in this direction lies the reasonable anticipation of important revelations as to the relations of

the tribes and nations of mankind to one original centre, and the determination of the probable lapse of time requisite for such a subdivision and migration of the common stock as meets the eye of the inquirer at the present day.

The number of languages spoken throughout the world at the present time has been computed to exceed four thousand. The number of dead and extinct languages is an unknown quantity which may be slighted or exaggerated according to the tendencies of the theorist and investigator. But the proposition which such facts as have already been indicated suggest to the mind, assumes a shape which may be stated in this form: If six or seven independent and mutually unintelligible languages, such as the Romance tongues, have been developed out of the common mother Latin in five centuries, how many centuries are required for one language to have begotten four thousand? The diverse circumstances tending to accelerate or retard the rate of progress, dependent on culture, isolation, and settled or migratory habits, no doubt complicate the question; and the possible, and indeed ascertained disappearance of languages, without leaving any trace of their vocabulary or grammar, detracts from the absolute value of conclusions thus determined. But with every allowance for the elements of doubt or error, we perceive in this direction one means whereby to gauge the probable duration of the human race.

Full value has already been attached by the philologist to the fact that the remarkable relations subsisting between the modern languages of Europe and the ancient dead language of the Indian Vedas, carry us back by the radiations of different members of the Aryan group to some probable Asiatic centre, according in so far with the history of the dispersion of the human race. But other elements contributing to the same source of approximate determination of the origin and age of man, point even still more unmistakably to a common centre; as is the case with the next to which I refer: THE DOMESTICATION OF ANIMALS. Geoffroi St. Hilaire estimated the animals reduced to a state of domestication at forty species, of which thirty-five, such as the horse, ox, dog, sheep, goat, and pig, may be characterized as cosmopolitan. Out of those thirty-five domesticated species possessed by Europe, thirty-one appear to originate in Central Asia, or in Northern Africa, in the vicinity of the Mediterranean Sea. Almost the whole are thus derived from warm climates, and so indicate that civilisation pertained to the primeval Asiatic man; that he brought with him to

Europe the animals he had already domesticated; and introduced there the pastoral life which is associated in patriarchal history with the infancy of Asiatic nations. The monuments of Egypt and Assyria illustrate the early domestication of cattle and fowls; while peculiar additions supply the wants of particular regions: such as the elephant, the camel, the llama, and ostrich, of tropical climates, and the reindeer of the Arctic north. Whilst, however, from the era of Athenian independence, Europe has been the centre of human progress; and the traces of its civilisation reach far behind that, into heroic ages of Grecian story: it is an important fact that nearly all the domesticated animals of Europe appear to have belonged originally to warmer climates, where it was possible for man to subsist on fruits and the vegetable products of the soil, and to have dwelt indifferent to the protection from the elements, which engrosses so much of labour in less genial climes. The latter condition forces him to develop the resources which supply the necessities of food, clothing, and shelter from an inclement sky; but the former is the state that leaves him at leisure to turn his intellectual powers to account, and achieve those victories of civilisation, which have not necessity, but progress and a higher utility in view.

In relation to America, the history of its domesticated animals is intimately connected with the next phase in the present argument: THE ORIGIN OF CIVILISATION. The whole evidence of history places beyond doubt that the seats of early civilisation lay in warmer climates, on the banks of the Nile, the Euphrates, the Tigris, the Indus, and the Ganges. The shores of the Mediterranean succeeded in later centuries to their inheritance, and were the seats of long-enduring empires, whose intellectual bequests are the life of later civilisation. But transalpine Europe is entirely of modern growth, and much of it is even now in its infancy. Here, then, we trace our way back to the infancy of reason. There is no endless cycle in which the nations could revolve. Man primeval in a state of nature, and in the midst of the abundance of a tropical region, employing his intellectual leisure, begins that progressive elevation which is as consistent with his natural endowments as it is foreign to the instincts of all other animals. He increases and multiplies, spreads abroad over the face of the earth; and slowly, in the wake of the wandering nations, follow the brightening rays of that civilisation which was kindled at the central cradle-land, and could burn brightly only amid the fostering influences of settled leisure.

America has no domesticated animals common to the other quarters of the globe, excepting such as have been introduced by her modern European colonists. The llama and the alpaca remain in their native regions, on the tropical plateaus of Bolivia and Peru; and those, with the dog, constitute the chief domesticated animals of the New World. The parrot, the toucan, and other native birds are also tamed by some of the tribes of South America, but, like the sacred Ibis of Egypt, rather for amusement than utility. All, however, indicate that man, if, as we believe, he migrated from Asia to America, brought with him no such evidences of progress as the domesticated animals of Asiatic origin prove to have pertained to the early colonists of Europe. But herein we once more see reproduced in the New World the same phenomena which appear to have attended the birth of civilisation elsewhere. The shores of the Western Hemisphere were reached at one or more points, by wanderers from the birth-land of the nations. Slowly its forests and prairies, its river valleys and great plateaus, were occupied; and then in the tropical regions, under skies rendered genial by the elevation of the Andes, and surrounded by the luxuriance of a perpetual summer, man found leisure to develop arts, letters, science, and to start on the career of human progress. Had the seats of indigenous American civilisation been found on the coast of New England, or on the shores of the Great Lakes, it would have been proof enough that it was borrowed; and we might then have turned with propriety to Phœnician, Egyptian, or Scandinavian theories of colonization. But the vale of Anahuac, and the plateaus of the southern Cordilleras, are the very centres provided by nature for the birth of a self-originating American civilisation. That when thus developed, it is found to present so many points of correspondence with the primitive civilisation of the Old World, only proves that both are alike the work of man, endowed with the same instincts, capacities, and faculties; and the amount of development in both cases is, I believe, a true gauge of the relative lapse of time.

AGRICULTURE, which is another branch of early civilisation, following closely in the wake of the domestication of animals by pastoral man, points to the same conclusions as the previous evidence. We have made very slight and unimportant additions to our domesticated animals since the eras of human civilisation recorded on the monuments of Assyria and Egypt. It is otherwise with our domesticated plants; though even of these the most im-

portant cereals date beyond definite chronicles, and belong in all probability to the Asiatic birth-land of the Aryan nations. Less importance is perhaps due to the tropical origin of domesticated plants than of animals; since in warm climates the most useful vegetable products were most likely to be found. But taken in conjunction with previous arguments it has considerable weight; and when we turn to the New World we see there clearly that the maize, the bean, tobacco, and other plants, including the potato, which have been brought under cultivation and disseminated among the northern tribes, are all traceable to tropical seats of a native civilisation. Their general dissemination adds another proof of the protracted occupation of America by its aboriginal tribes; the fewness of their number, and the uniformity of their diffusion, reduces the length of that period within limits compatible with other evidence of the duration of the race.

So also is it with LETTERS. They lie at the foundation of all high and enduring civilisation. Yet we can trace them back to a rude origin, consistent with the most rudimentary elements of human intelligence; and even in the late Ptolemaic era of Egypt, we find its written and graven records betraying unmistakable traces of the infancy of letters, as the offspring of the same primitive pictorial art, which we recover anew in the picture-writing of Mexico and the symbolic totems of the American Indian. The visible progress is so slow that we stand in no need of vague geological periods to embrace the history of man's civilisation. Within the interval between the rudest archaic monument of Egypt and her Rosetta Stone graven in the reign of Ptolemy Epiphanes, we see man laboriously work out for himself a crude and very imperfect alphabet, the parent of all later and better ones; and can trace each progressive step. We witness the whole process, from its very beginning in a picture-writing as simple as that with which the Indian savage records his deeds of arms on his buffalo robe, or engraves the honours of the warrior of his tribe on his grave-post. We need not therefore seek for its origin in older periods than are already embraced within the reasonable concessions of the chronologist; and by the help of such indications as the birth of letters supplies, we can trace back man's intellectual history to its very birth-time, and frame a shrewd guess at the age of mind. And when we pass from the Old World to the younger world of the West, its revelations amply bear out such inductive reasoning. There letters had only reached the stage of an abbreviated

picture-writing, perhaps approximating to a word-alphabet, like that of the Chinese, but with no trace of pure phonetic signs. If, as I believe, the continent was peopled from Asia, it was necessarily by younger nations. But its civilisation was of native growth; and so was far younger than that of Egypt. In full accordance with this we find writing, first in the most infantile germ of rude Indian picturing; next in the progressive stage of Mexican picture-writing, with abbreviation, symbols of thought, and signs relating to the details of the calendar; and in its highest state in the hieroglyphic holophrasms of the Central American inscriptions and manuscripts: which only required time to have produced a native demotic writing; an alphabet pregnant for the New World as that of Phœnicia has proved for the Old; and, by their means, a literature embodying the reflex of the native mind.

So also with NUMERALS. We can trace back Arabic notation to the hieratic forms of primitive Egyptian numerals, which had no value of position, rendered number by a mere multiple of the simplest signs for units, tens, and hundreds; and only by abbreviating their combinations into a distinct set of numerical symbols for the days of the month, made the first approach to those arbitrary signs which were adopted by the Arabian mathematicians, and have become the universal arithmetical language of civilized nations. The idea of number is one of the earliest presented to the human mind, and may indeed be regarded as coexistent with the intelligent exercise of the human faculties. But, except when dealing with very small numbers, it is only the educated mind that is able to realize any definite conceptions associated with computation; and so soon as this was called into general use, for purposes of commerce, tribute, or the calculations of science, written signs became indispensable. The appreciation of number is accordingly frequently made a test of intellectual development, as in the case referred to by Sir John Bowring, of a Ceylonese, who was accused of murder, but was acquitted by the English judge, from his being found incapable of counting three. The Australians, sometimes reckoned among the lowest types of humanity, are a step in advance of this. In New South Wales the native numerals extend to four, beyond which the only term in use is *kau-wul-kau-wul*, signifying many; and even in the majority of the native languages of America the primitive roots of their numerals do not extend beyond five, the source of which is still indicated by the Indian's practice of holding up the number of

fingers corresponding to the leading figure in any quantity specified by him. Mr. Francis Galton, in an amusing account of the Damaras, in his *Narrative of an Exploration in Tropical South Africa*, remarks of them: "In practice, whatever they may possess in their language, they certainly use no numeral greater than three. When they wish to express four they take to their fingers, which are to them as formidable instruments of calculation as a sliding-rule is to an English schoolboy. They puzzle very much after five, because no spare hand remains to grasp and secure the fingers that are required for units." Such is no uncommon condition of the savage mind; and I suspect the dual forms existing in certain languages, as in the most cultured of all, the Greek, preserve to us the memorial of that stage of thought when all beyond two was an idea of indefinite number. We can discern the various stages which have, in certain nations, marked the passage from the vague idea of multitude to the definite one of number. This is seen, for example, in repeated passages of the Old Testament, as in that of Jeremiah: "As the host of heaven cannot be numbered, neither the sand of the sea measured; so will I multiply the seed of David my servant, and the Levites that minister unto me."[1] Assuming the Hebrew prophet to refer to the visible heavens as seen by the naked eye, the stars are very far short of innumerable; though to a pastoral people, dealing in no elaborate computations, the simile was as expressive of multitude as the numberless sand-grains on the sea-shore. The same idea is illustrated by the manner in which the term μυρία is always used by Homer in its primary sense of an indefinite number.

Many of the languages of America are found to present the singular feature of a complete decimal or vigintal vocabulary of numerals, with the power of combination in some of them sufficient to adapt them to elaborate computations. This is remarkable among rude hunter tribes standing as little in need of a system of arithmetical notation as the African Damaras; and it is deserving of consideration, whether there may not be in this some lingering trace of the civilisation which has left its memorials in many elaborate geometrical structures. Practically, however, on entering into conversation with the Indian, it becomes speedily apparent that he is unable to comprehend the idea of abstract numbers. They exist in his mind only as associated ideas. He has a distinct conception of five dogs or five deer; but he is so unaccustomed to the idea of number as a thing apart from specific objects, that I

[1] Jer. xxxiv. 22; *vide* also Gen. xv. 5; xxii. 16-18.

have tried in vain to get an Indian to admit that the idea of the number five, as associated in his mind with five dogs, is identical, so far as number is concerned, with that of five fingers. Abstract terms and ideas are equally absent from the language and thought of the Indian; and indeed, as we see in our own English speech, are of late growth in any language. But the concrete form of thought controls the whole American vocabularies. The different directions in which they have expanded to embrace the novel ideas consequent on European intercourse, illustrate its influence on the multiplication of mutually unintelligible dialects among unlettered tribes; and this is specially noticeable in the singular contrast in the names of numerals in American languages, otherwise disclosing striking affinities, as compared with the uniformity of numerical nomenclature pervading the whole Aryan tongues. But no corresponding variety of symbols meets the eye. In the most perfect of the native systems of notation the signs have advanced little beyond that primitive repetition of units which betrays itself as the natural form of numeration, even in the matured hieroglyphics of the Rosetta Stone.

Thus once more we appear to reach an infantile stage of human thought in this direction also. And so is it with man's ARTS: his architecture, sculpture, weaving, pottery, metallurgy; and his SCIENCE: his astrology, astronomy, and geometry. The beginnings of all of them lie within our reach. Egypt, in common with some other ancient nations, had a year of 360 days: evidence of the first crude recognition of solar time, still perpetuated in the division of the ecliptic into 360 degrees. This was corrected to a year of 365 days, which also could only remain in use unmodified for a few generations; and in the greater and lesser cycles of Egypt, Mexico, and Peru, we equally recognise divisions of time which could not have been perpetuated through many centuries without a manifest discordance with actual astronomical phenomena, and with the changing seasons, to which they always bore an intimate relation. Seed-time and harvest are inevitably bound up with all national and religious festivals. We can trace back man's progress in the history of his calendars: in the "New Style" of England, with her lost eleven days, still religiously preserved in the unreformed calendar of Russia; in the French calendar of the Great Year, anno 14, when the Republic, with far-seeing forethought, enacted that A.R. 3600, A.R. 7200, and A.R. 10,800 shall not be leap years; while the very first year of this comprehensive system did not live out half its days! Backward we trace our way amid the conflicting dates con-

sequent on the independent adoption of the Gregorian Calendar at various successive periods, from its first enactment by the Council of Trent in 1582, to its tardy adoption by protestant Sweden in 1753. As we retrace our steps, we find the Church divided from the second to the fourth century, until another Council, that of Nice, determined for her the true period of keeping Easter. Then behind this, and before the Christian era, we come to the determination of the Julian Year, and the correction of the accumulated errors of previous divisions of time, in the year B.C. 47. The names of Ptolemy, Hipparchus, Meton, and Euctemon, carry us back by further steps; until in the Nile Valley we seem to reach the beginnings of calendars, and recognise, in the Vague Year of the Egyptians, the first definite determination of solar time, with its relations to a beginning of time for man himself.

Astronomy has had its rise, alike in the Old World and the New, in elevated tropical table-lands, and fruitful valleys and plains, such as those through which the Euphrates and the Tigris roll their ample floods, or that strange river-valley which the Nile fertilizes with its annual overflow. In those favoured regions agriculture involves little toil, and the harvest ripens almost spontaneously for the reaper's sickle. There, also, flocks and herds were tended and trained for the use of man; and, in the pastoral life of their earliest communities, the herdsmen watched their flocks under the mild beaming stars, and acquired an intelligent familiarity with the constellations, and the planets that wander through the spangled dome of night. In the infancy of our race, men studied the stars, bringing to the aid of their human sympathies the fancies of the astrologer, to fill the void which their imperfect science failed to satisfy. The Chaldean shepherds, who had never travelled beyond the central plain of Asia, where in fancy we recognise the cradle of the human race, began the work of solving the mystery of the heavens; and what the Scottish shepherd-astronomer of the eighteenth century, James Ferguson, accomplished, proves what lay in their power.

> "O honoured shepherd of our later days,
> Thee from the flocks, while thy untutored soul,
> Mature in childhood, traced the starry course,
> Astronomy, enamoured, gently led
> Through all the splendid labyrinths of heaven,
> And taught thee her stupendous laws."[1]

[1] *Eudosia, a Poem on the Universe*, by Capel Lofft.

It was impossible that intelligent man could look forth, night after night, on the constellations, as they varied their place with the change from twilight to the dawn, and from moon to moon, and on the planets that moved in timely courses amid the twinkling stars, without discovering some of their relations to the seasons of the revolving year. All probability, however, is in favour of the idea that the Moon,—Sanscrit, *mâs*, the measurer, *mâsa*, a month;—was the earliest measurer of time. Years of one, two, three, four, and six months are attributed to the Egyptians, Arcadians, Carians, and other nations, in remote antiquity; and attempts can be traced in many allusions of classical writers, at the construction of a year determined by a cycle of lunations. The effort was even made at an early stage of Biblical criticism to solve some difficulties, such as the extreme age assigned to the patriarchs, by assuming that the whole antediluvian chronology is constructed on other than solar years. It is, at any rate, worthy of note, that among primitive nations, time is more frequently reckoned by moons than by solar years. This is the case with various American nations. The Crees, for example, have no word for *year*, but reckon solely by moons, beginning each when the new moon appears; and naming them according to the most characteristic natural event of the season; *e.g.*, *Is-ke-pé-sim*, Duck moon; *A-ik-e-pé-sim*, Frog moon; *Nó-tse-hi-kó-pe-sim*, Buffalo-rutting moon, etc. The only term for year among the Chippewas is *ning-oo-pe-poon*, *i.e.*, one winter; *e.g.*, *ningoo-pepoon-uh-ge-ze*, he is one year old; *neizhoo-pepoon-uh-ge-ze*, he is two years old.

In this way the returning seasons determined the solar cycle, though with no such precise limits as are presented by the phases of the moon. But in some countries, as in Egypt, with its annual rising of the Nile; or in Peru, with its direct equatorial phenomena at the solstices; and among all pastoral and agricultural people: a solar division of time was more or less clearly indicated by familiar natural occurrences. Hence the traditions of Egyptian, Chaldean, and Babylonian astronomical science, are fitly associated with eras of patriarchal agriculturists and shepherd kings.

But amid the same scenes of mild pastoral life, empires and populous cities first arose; forms of worship, and periodical festivals and sacrifices, marked the return of the seasons, when the firstlings of the flock, and the first-fruits of the harvest-home, were offered by priests on national altars. The herdsman and the tiller of the soil traced to the warm beams of the bright god of day

the sources of fertility in flock and field. They beheld the sun when it shined, and the moon walking in brightness, and their heart was secretly enticed, and their mouth kissed the hand.[1] Alike in the tropical seats of primitive Asiatic empire, in the African Nile-Valley, and on the plateaus of the Andes, the early astronomers became Sabeans, and worshipped the hosts of heaven, while striving to solve their mysterious relations to the earth. But if we follow them in their first determination of solar time; and conceive of an annual festival, with sacrifices of the firstlings of the flock such as we recognise in the most ancient religious rites, with a calendar founded on a year of 365 days: only a very few generations, at most, could pass away, before altogether irreconcilable and ever-increasing discrepancies would occur between the appointed festival and the actual season with which it was originally designed to harmonize. The lambs would be wanting for the burnt-offering; the festival of harvesting would return while the wheat was still green in the ear, or the bright tassel of the maize was unformed; and the incensed god would be assumed to look down on his worshippers with wrath, and tardily to withhold the increase of their flocks and the yield of their early seed-time, until the calendar was readjusted, and the sacred and solar years were restored to harmony.

Nevertheless, such arguments are not produced here under the idea that they solve all difficulties. We cannot shut our eyes to those which force themselves on our attention, as clashing with many preconceived ideas. However recent the origin of civilisation may have been, the geologist proves, seemingly beyond dispute, that man existed in Europe contemporaneously with an animal-life wholly incompatible with its physical conditions within any known period, if not indeed in ages prior to the present development of many mountain and river systems, and coast lines. The intelligent investigator, on examining the traces of art and mechanical skill belonging to his primeval human period, finds no conflict between their disclosures and the evidence of the modern origin of letters, arts, science, and agriculture. Man appears to him there as the savage occupant of a thinly-peopled continent, warring with gigantic carnivora, the remains of which are alone known to us by disclosures of geological strata and ossiferous caves. Through how many ages this unhistoric period of European man preceded the dawn of civilisation and history is still undetermined; but it is

[1] Job xxxi. 26, 27.

folly to deny that it upsets all preconceived ideas of the primitive European man.

We seem to be returning by other routes to a chronology rivalling that of the fabulous chronicles of antiquity. But while we still reject these as valueless, the fact is worth recalling that the earliest chroniclings of the most ancient nations show them even then looking back on a past little less vast than that now presented to our acceptance as a scientific fact. The Egyptian priests, according to Diodorus, reckoned the time from the reign of Helius to Alexander at about 23,000 years. Cicero speaks of the written memorials of the Babylonians as embracing a period of 470,000 years; and Pliny cites Epigenes as stating that they were in possession of astronomical observations inscribed on baked bricks, extending over 720,000 years. It is needless to refer to still more extravagant claims of Hindu or Chinese cosmogonists to a national history of inconceivable antiquity. But this, at least, is obvious, that the most ancient nations had no belief or tradition that they were living in the world's youth.

Time, however, is a relative thing; and while the history of civilisation proves that we are dealing with no incomprehensive series of cycles, the boldest speculations of the geologist still leave man among the most modern of created beings. We cannot, indeed, shut our eyes to the fact that our investigations, however far back they have guided us on a definite track, reveal beyond it an undefined interval between that and the genesis of man. The subject of investigation is a noble one; the questions it involves are correspondingly difficult, and must await the illumination which further observation and discovery will supply. Truth can, meanwhile, derive no aid from the evasion of difficulties. Science fails, at its present stage, to reduce the first steps in human progress to a precise chronology. The compass of their duration is still open to dispute, and the number of centuries required for their evolution varies, on the one hand according to the estimated rate of progress of infantile human reason; and on the other, with that of the inert yet ever changing surface of the globe. But the demonstration of a prolonged term of existence for man, tends to remove greater difficulties than it creates. While no essential doctrine or moral principle is involved in the acceptance or rejection of any specific term of duration for the human race: with adequate time for the operation of influences on which the development of varieties of a common race depend, the necessity

for a multiplicity of species disappears. The tendency of the geologist, at present, in dealing with the novel disclosures of the most recent strata, is to over-estimate the period required for their formation, and thereby needlessly to antedate the advent of man. But this error will correct itself in due time; and the ethnologist may hopefully anticipate the harmony of results dependent on the determination of the true mean. It would be folly to pretend that thereupon all difficulties will be removed; for the inquiry is alike comprehensive in its theme, and in the results dependent on its solution; and has to await the light of many new discoveries to reconcile seemingly conflicting evidence. But I venture to hope that the process of investigation and reasoning here pursued may unravel some perplexities; and show such an approximation to a beginning in relation to man's intellectual progress, as to confirm the anticipation that ampler knowledge will bring with it fresh evidence of harmony between the disclosures of science and the dictates of revelation.

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